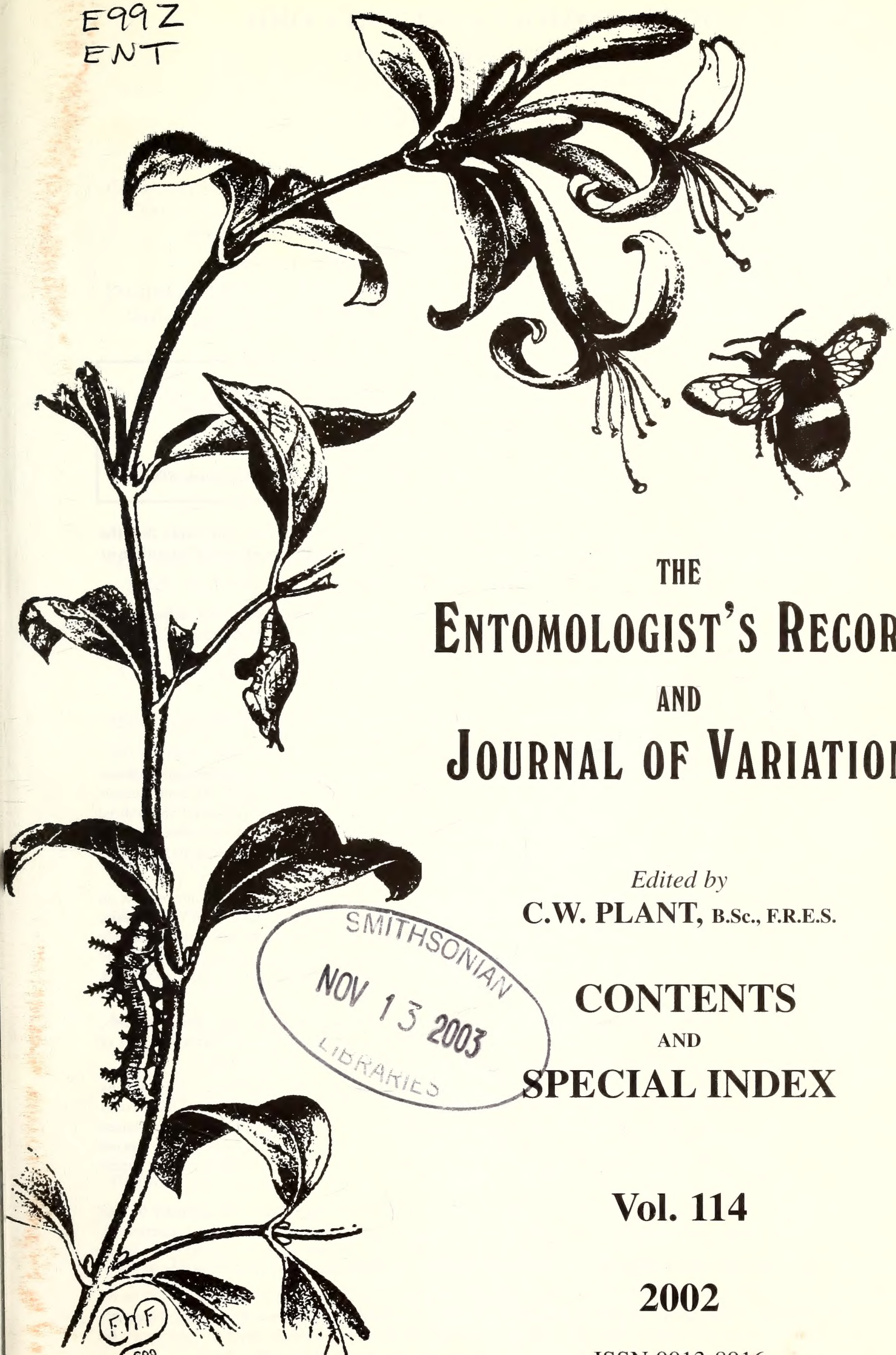

THE ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

Edited by

C.W. PLANT, B.Sc., F.R.E.S.

CONTENTS AND SPECIAL INDEX

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SPECIAL INDEX

Compiled by David Wilson

Newly described taxa are indexed in **bold type.**

Taxa new to Britain or newly recognised as British are denoted by an asterisk.

LEPIDOPTERA

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MECOPTERA

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ORTHOPTERA

PSOCOPTERA & PSOCIDS

MAMMALS

VACANCY FOR INDEXER

The *Entomologist's Record & Journal of Variation* is looking for a new Indexer to take over from David Wilson, whose other commitments will prevent him from continuing this service beyond volume 115. The job will involve creating the special index only – the Contents and Author Index are created by the Editor as each issue is published. As with all posts in this journal, the job is entirely unpaid, although justifiable expenses will be reimbursed.

The task involves reading through each of the six issues per year, and noting down the names of every species mentioned along with the page number of that mention. The Editor can digitally scan a typescript and convert it to a word processor file for editing, if necessary, but in terms of inserting names in alphabetical order it is most strongly suggested that the indexer has access to a word processor. The finished product will then be sent to the editor on a floppy diskette, on a CD or via e-mail, at the Indexer's discretion, in a format that can be read by Microsoft Word 2000 software. The job can be done either as six separate sessions or in one go in December, but we require the index by early January and so the former is strongly recommended.

A gradual change-over period, whereby the new person indexes one or two issues under David Wilson's guidance is possible. **Interested parties are invited to contact the Editor in the first instance** – refer to contact details on page ii.

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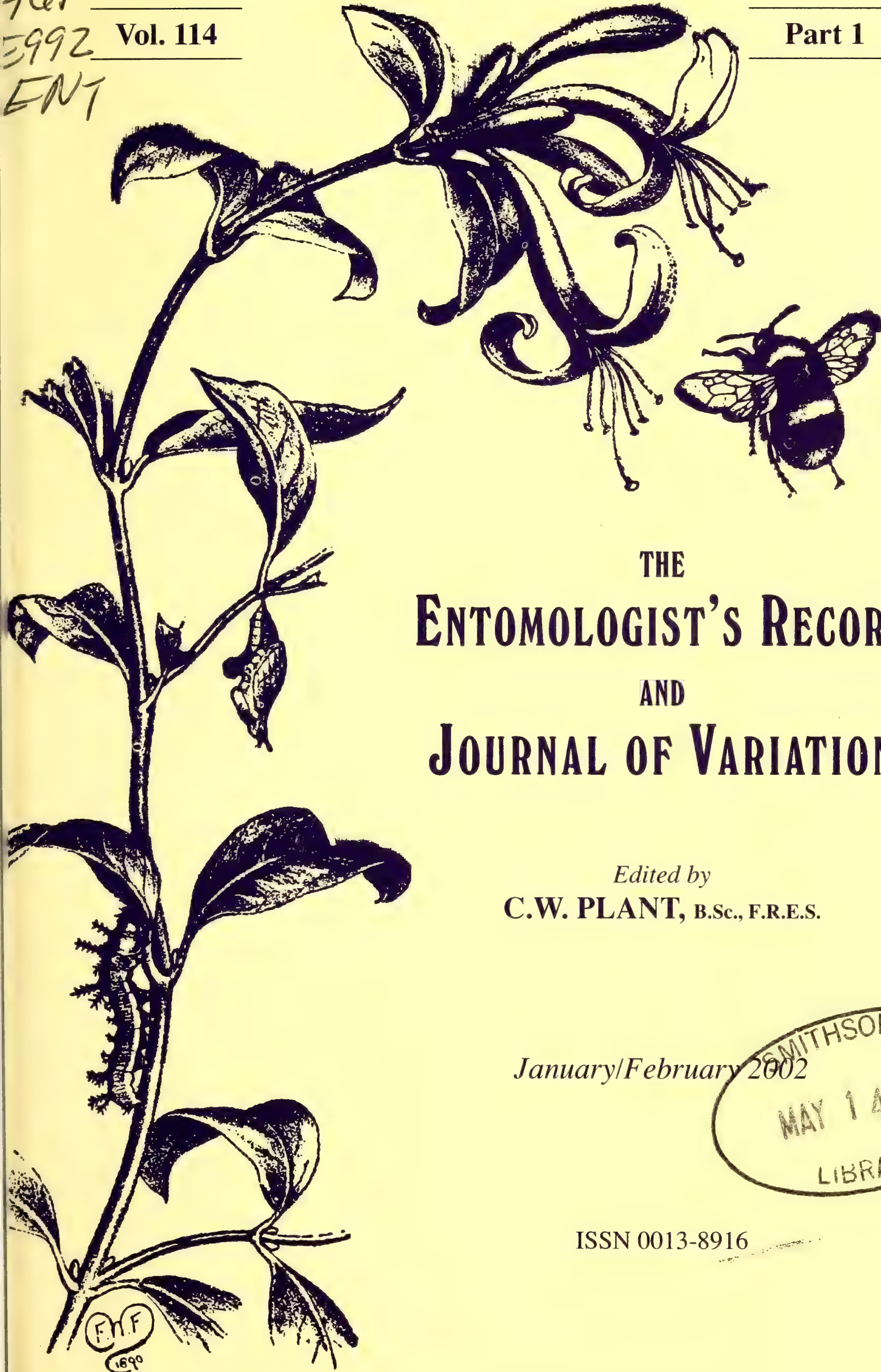

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THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1999

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Abstract

Formally accepted records of immigrant Lepidoptera occurring in the British Isles during the year 1999 are listed and discussed. For less frequently encountered species full information is given; for common immigrants a selection of the more important records is presented.

Introduction

Migrant activity was very quiet during the first half of the year. The only notable events were the capture of the fifth British record of the Eastern Bordered Straw *Heliothis nubigera* (H.-S.), in South Devon in January and the unusual number of Blossom Underwing *Orthosia miniosa* (D.& S.) noted from coastal localities and other sites where it is not known to be resident. Over sixty specimens were reported from Cornwall and along the coast to Norfolk and these were considered to be possible migrants although no past evidence exists to suggest this species is migratory.

There was a slight improvement in the remainder of the 1999 season, but no record numbers of either the rare or common migrant species were reported. The few highlights included single examples of the Egyptian Bollworm *Earias insulana* (Boisd.) from Dorset and the Spiny Bollworm *E. biplaga* (Walk.) from Kent, both being the third records for Britain. During the first week of August singleton specimens of the Spotted Clover *Schinia scutosa* (D.& S.) occurred in Kent and Yorkshire. This is a real rarity and only two others have been recorded in this decade. Only three specimens of *Sclerocona acutellus* (Evers.) have been recorded in the past, so the three from South Devon constituted a best annual total record. At the time it prompted the speculation that this species, first seen in 1988, might be resident, but the absence of further records in 2000 and 2001 has proved otherwise. It has also been suggested that the pupae may have been introduced with thatching reed from Hungary or elsewhere in eastern Europe.

The only new macromoth for the year was the Oak Rustic *Dryobota labecula* (Esp.). Two male specimens were taken in the Autumn at light at Freshwater, Isle of Wight. This species is a recent colonist to the Channel Islands and its appearance and hopefully its eventual residency in England was predicted.

Recent work on the *Dioryctria* species has shown that a fourth species, *sylvestrella* (Ratz.) has also occurred in Britain, probably as an immigrant. Articles formally adding the species to the British list are in press, but specimens identified from 1999 are included in this account.

Guidelines for contributors

The number of contributors continues to rise year after year, and the increased coverage of migrant activity is very welcome. However, this increased coverage brings with it an increased workload in compiling the records, together with the increased chance of introducing errors. The following guidelines should help you to help us.

Separate years' contributions should not be combined. Data should include species, site, vice-county and recorder, together with stage, if not adult, and other information such as numbers or behaviour. The date of trapped moths <u>must</u> be the date on which the relevant night begins, not the following day. This is a universally accepted convention and failure to follow it leads to considerable confusion. County recorders, or others, submitting large numbers of records could help by sorting the records into species order then vice-county order then date order (as in the following account); this should be a simple procedure if records are held on a database. Finally, contributions are welcomed by e-mail (address above), preferably as an attachment.

Abbreviations

E	Exotic introduction/escape
I	Primary immigrant
In	Introduction (including importations)
R	Resident
R(t)	Temporary resident
V	Vagrant/wanderer

ANNEX 1: RECORDS OF SCARCER SPECIES

CHOREUTIDAE

***Tebenna micalis* (Mann) [I/R(t)]**

S. DEVON [**3**] Chudleigh Knighton Heath, 29.8 (RJH).

YPONOMEUTIDAE

***Yponomeuta rorrella* (Hb.) [I?]**

E. NORFOLK [**27**] Barton Broad, 5.8 (P. Heath per DH).

OECOPHORIDAE

***Ethmia bipunctella* (Fab.) [V?]**

DORSET [**9**] Portland Bird Observatory, 31.7 (MC).

TORTRICIDAE

***Eupoecilia ambiguella* (Hb.) [I?]**

DORSET [**9**] Portland, 31.5, 1.8 (2) (MC).

***Crocidosema plebejana* Zeller [I/V]**

S.E. YORK [**61**] Kilnsea, 14.10 (DPB).

***Cydia amplana* (Hb.) [I]**

S.E. YORK [**61**] Spurn, 3.8 (BRS).

PYRALIDAE

***Euchromius ocellea* (Haw.) [I]**

W. CORNWALL [**1**] Porth St Agnes, 21.1 (Tremewan *in* Tunmore, 2000c). W. SUSSEX [**13**] Walberton, 21.9 (JTR). E. KENT [**15**] Kingsgate, 5.9 (Solly, 2000).

***Haimbachia cicatricella* (Hb.) [I]**

E. KENT [**15**] Dungeness, 31.7 (BB/SB).

***Platytes alpinella* (Hb.) [I?/R?/V?]**

DORSET [**9**] Portland Bird Observatory, 24.8 (2) (MC). SURREY [**17**] Wimbledon Common, 17.7 (BS/MSP/GAC).

***Evergestis extimalis* (Scop.) [I?/R?]**

OXON [**23**] Henley-on-Thames, 20.7 (DJW).

***Evergestis limbata* (L.) [I?/R(t)?]**

E. KENT [**15**] Lydd, 7.7 (1st Kent record) (KR).
CHANNEL ISLANDS Guernsey: Mount Durand, 24.8 (R. Austin).

***Hellula undalis* (Fab.) [I]**

W. CORNWALL [**1**] Cury, 10.9 (C. Hart *in* Tunmore, 2000b). E. KENT [**15**] Dymchurch, 19.9 (JO); New Romney, 20.9 (KR).

***Loxostege sticticalis* (L.) [I?]**

E. NORFOLK [**27**] Hainford, 12.8 (DH).

***Uresiphita polygonalis* ([D. & S.]) [I]**

IOW [**10**] Freshwater, 31.10 (SAKJ).

***Sitochroa palealis* ([D. & S.]) [I?/R?]**

S. DEVON [**3**] Torquay, 8.7 (2), 9.8 (BD). DORSET [**9**] Portland, 2.7 (2), 13.7, 17.7 (MC); Maiden Castle, Dorchester, 23.7 (JHC); Portland Bird Observatory, 25.7, 5.8 (MC). IOW [**10**] Binstead, 22.6-2.8 (4) (BJW); Freshwater, 30.7, 4.8 (SAKJ). S. HANTS [**11**] Southsea, 17.7 (I. Thirwell per BG). E. KENT [**15**] Kingsgate, 7.7 (Solly, 2000). SURREY [**17**] Howell Hill, Ewell, 28.7; South Croydon, 28.7 (GAC). S. ESSEX [**18**] Langdon Hills, 16.7 (PH). N. ESSEX [**19**] Dovercourt, 4.7 (BG), 17.7 (CG); Kirby-le-Soken, Mistley, 17.7 (ICR), 17.7 (PBe); Walton-on-Naze, 31.7 (10) (PS). BUCKS [**24**] College Lake, 17.7 (J. Lovell per BG). BEDFORD [**30**] Maulden Woods, 17.7 (V. Arnold per BG).

***Sitochroa verticalis* (L.) [I?/R?]**

S. ESSEX [**18**] Tilbury Power Station, 12.8 (PH). N. ESSEX [**19**] Dovercourt, 22.9 (CG).

***Sclerocona acutellus* (Evers.) [I]**

S. DEVON [**3**] Exeter, 13.6, 14.6, 5.7 (PBu).

***Ostrinia nubilalis* (Hb.) [I?/R?]**

S. DEVON [**3**] Exeter, 19.6, 7.7 (PBu); Starcross, 30.6, 19.7 (AHD); Abbotskerswell, 30.7, 10.9 (BPH); Buckfastleigh, 10.9 (B&LS). DORSET [**9**] Portland Bird Observatory, 10-21.9 (16) (MC). IOW [**10**] Binstead, 12.7-16.9 (6) (BJW); Freshwater, 1.8, 10.9 (2), 11.9 (2) (SAKJ). S. HANTS [**11**] Hayling Island, 4-15.9 (14) (Phillips, 2000). N. HANTS [**12**] Selborne, 11.9 (AA). E. SUSSEX [**14**] Icklesham, 8.7-11.9 (13) (PJ). S. ESSEX [**18**] Chelmsford, 8.7 (G. Wilkinson per BG); Thundersley, 17.7 (DGD/BG); North Chingford,

18.7 (B. Pateman per BG). N. ESSEX [**19**] Colchester, 28.6 (JF); Dovercourt, 4.7 (BG), 17.7 (CG); West Bergholt, 10.7 (JF/BG); Beaumont-cum-Moze, 18.7 (JBF); Stour Wood, 24.7 (PS). E. GLOUCESTER [**33**] Hempsted, 31.7 (G. Avery per RG).

Antigastra catalaunalis **(Dup.) [I]**

E. KENT [**15**] Folkestone Warren, 22.9 (TR). S. ESSEX [**18**] Bradwell-on-Sea, 21.9 (AJD).

Diasemia reticularis **(L.) [I]**

N. DEVON [**4**] Bideford, 30.7 (ASH).

Diasemiopsis ramburialis **(Dup.) [I]**

S. ESSEX [**18**] Bradwell-on-Sea, 20.9 (AJD).
CHANNEL ISLANDS Guernsey: La Broderie, 19.8 (P. Costen *in* Austin, 2000).

Duponchelia fovealis **Zeller**

S. HANTS [**11**] Southsea, 3.9 (Langmaid *in* Tunmore, 2000c).

Palpita vitrealis **(Rossi) [I]**

W. CORNWALL [**1**] Lizard, 3.11 (MT); Mullion, 3.11 (Tunmore, 2000b); St Agnes, Scilly, 7.11 (Hale & Hicks, 2000). S. DEVON [**3**] Chardstock, August (A. Jenkins per RFM). DORSET [**9**] Portland Bird Observatory, 26-29.10 (5) (MC); IOW [**10**] Freshwater, 12.8, 25.8, 5.9, 27.10, 29.10, 31.10 (SAKJ), 3.11 (2) (DBW); Binstead, 3.11 (BJW). W. SUSSEX [**13**] Ferring, 27.10 (2) (THF); Walberton, 1.11 (JTR); Kingsham, 8.11 (SP). E. SUSSEX [**14**] Rye Harbour, 13.9 (PT). E. KENT [**15**] Ramsgate, 27.9, 29.10 (P. Milton *in* Solly, 2000); Densole, 9.10; Folkestone Warren, 29.10 (TR); Kingsgate, 1.11, 4.11 (Solly, 2000). S. ESSEX [**18**] Bradwell-on-Sea, 26.8, 23.9, 29.10 (AJD).

Conobathra tumidana **([D. & S.]) [I]**

W. SUSSEX [**13**] Walberton, 11.8 (JTR). E. KENT [**15**] Lydd, 29.6 (KR); New Romney, 2.8 (2) (SPC).

Sciota hostilis **(Steph.) [I?]**

E. SUSSEX [**14**] Icklesham, 17.7 (IH det. MSP).

Dioryctria abietella **([D. & S.]) [I?]**

N. HANTS [**12**] Selborne, 9.7 (AA). E. KENT [**15**] Thanet, 26.6-4.8 (9) (Solly, 2000). N. ESSEX [**19**] Kirby-le-Soken, 17.7 (PBe); Great Horkesley, 17.7 (B. Harley per BG). S.E. YORK [**61**] Spurn, 2.6, 26.6, 2.7, 11 and 12.7 (BRS).
CHANNEL ISLANDS Guernsey: La Chêne, 27.7 (TNDP *in* Austin, 2000).

Dioryctria sylvestrella **(Ratz.) [I]**

E. KENT [**15**] Longrope Wood, 29.6 (JHC); Dymchurch, 30.7 (JO); New Romney, 30.7 (SPC).
CHANNEL ISLANDS Jersey: St. Catherine, 31.7 (Long, 2000).

Vitula biviella **(Zell.) [I?/R(t)?]**

E. KENT [**15**] Lydd, 1-17.7 (9) (KR); Greatstone, 1.7 (BB).

PAPILIONIDAE

Papilio machaon **L. Swallowtail [I]**

IOW [**10**] Wootton, 28.8 (Knill-Jones, 2000). E. SUFFOLK [**25**] Landguard Bird Observatory, Felixstowe, 9.9 (Odin, 2000).
CHANNEL ISLANDS Guernsey: Fort Doyle, 11.5; Les Tielles, 10.6 (A. Smith); Fort le Crocq, 23.7 (L. Thomson *in* Austin, 2000).

***Iphiclides podalirius* (L.) Scarce Swallowtail [I]**

CHANNEL ISLANDS Guernsey: St Martins 6.8 (C. David *in* Austin, 2000).

PIERIDAE

***Colias croceus* (Geoff.) Clouded Yellow [I]**

E. CORNWALL [**2**] Ladock, 26.8 (J. Rule per RDP). S. DEVON [**3**] Tuckermarsh, 6.5 (RWB); Slapton, 12.8 (JHC). DORSET [**9**] Portland, 19.4-12.10 (8) (MC); W. SUSSEX [**13**] Thorney Island, 7.8 (2), 22.8, 29.8 (TW); Littlehampton, 13.8 (2) (R. Kemp per CRP); Worthing, 28.8 (B. Fordham per CRP); Ford, 29.8 (R. Kemp per CRP); Pagham, 4.9; Pilsey Island, 30.9 (TW). E. SUSSEX [**14**] Rye Harbour, 1.5 (B. Yates per CRP); Seaford, 1.8; Beachy Head, 1.8 (PW); Brighton, 4.8 (TW); Cuckmere Valley, 5.8 (PW); Eastbourne, 9.8 (D. Burroughs per CRP); Newhaven, 6 and 13.10 (PW). E. KENT [**15**] Newington, 2.8 (REL); Dungeness, 5.10, 25.10, 4.11 (per Dungeness Bird Observatory). S. ESSEX [**18**] Thundersley, 24.7 (DGD); Tillingham, 29.7 (I. Cotman per BG); Bradwell-on-Sea, 25.9, 13.10, 27.10 (Dewick, 2000). N. ESSEX [**19**] Harwich, 3.11 (G. Bond per BG). PEMBROKE [**45**] Skomer, 2.9 (Hayden, 2000).

WEXFORD [**H12**] The Raven, 12.7 (c. 25), 14.7 (2) (GRE).

CHANNEL ISLANDS Guernsey: 18.7-12.10 (9) (Austin, 2000).

NYMPHALIDAE

***Aglais polychloros* (L.) Large Tortoiseshell [I?/In?]**

N. ESSEX [**19**] Brightlingsea, 28.8 (D. Scott per BG).

***Aglais antiopa* (L.) Camberwell Beauty [I]**

IOW [**10**] Newtown, 3.5 (Knill-Jones, 2000). E. SUFFOLK [**25**] Minsmere, 26.7 (Anon., 2000). BANFF [**94**] Duff House, August (RL); Portsoy, 3.9 (Mrs M. Williams per RL). ZETLAND [**112**] Scousburgh, 12.7 (Pennington & Rogers, 2000).

***Argynnis lathonia* (L.) Queen of Spain Fritillary [I]**

E. SUFFOLK [**25**] Minsmere, 17 and 18.7 (Anon., 2000).

***Danaus plexippus* (L.) Monarch [I]**

A detailed account of the large migration of September/October is given by Tunmore (2000a), and only additional records are given here. STAFFORD [**39**] Blithfield Reservoir, 6.10 (per D. Emley). IOM [**71**] Marown, early May (per GDC).

LASIOCAMPIDAE

***Dendrolimus pini* (L.) Pine Tree Lappet [In?]**

S. ESSEX [**18**] Benfleet, larva, 20.7 (DGD).

GEOMETRIDAE

***Aplasta ononaria* (Fuess.) Rest Harrow [I?/V?]**

W. SUSSEX [**13**] Walberton, 8.8 (JTR).

***Cyclophora puppillaria* (Hb.) Blair's Mocha [I]**

W. CORNWALL [**1**] Cadgwith, 2.11 (AG). IOW [**10**] Binstead, 19.9 (BJW). SURREY [**17**] Chessington, 9.10 (JP).

***Idaea degeneraria* (Hb.) Portland Ribbon Wave [I?/V?]**

S. DEVON [**3**] Slapton Ley, 11.9 (RFM).

***Rhodometra sacraria* (L.) Vestal [I]**

W. CORNWALL [**1**] St Agnes, Scilly, 30.8, 10.9 (4) (Hale & Hicks, 2000); Lizard, 12-15.9 (3), 6-9.10 (3), 6-7.11 (5), 15.11, 25.11 (MT). S. DEVON [**3**] Abbotskerswell, 6.9, 11.9 (BPH); Dawlish, 29.9 (PF); Tuckermarsh, 7.10 (RWB); Starcross, 31.10 (AHD). DORSET [**9**] Portland Bird Observatory, 5.6, 2.9-9.10 (12), 8.11 (MC). IOW [**10**] Binstead, 12.8-12.11 (5) (BJW); Freshwater, 27.8 (DBW); Shanklin, 12.10 (J. Cheverton per SAKJ). S. HANTS [**11**] Hayling Island, 29.8-15.9 (5) (Phillips, 2000). N. HANTS [**12**] Selborne, 25.8, 29.8 (AA); Greywell, 22.10 (P. Boswell per AHD). W. SUSSEX [**13**] Walberton, 8.6, 11.8-28.9 (26) (JTR); Ferring, 1.7 (THF); Lyminster, 25.8 (R.E. Pratt per CRP); Kingsham, 2.9, 11.9, 25.9 (SP); Chichester, 7.9 (Drs Perry per CRP). E. SUSSEX [**14**] Icklesham, 18.7-9.10 (8) (PJ); Pett, 23.7 (PT); Rye Harbour, 4.8, 25.8-9.9 (15) (PT); Peacehaven, 25-27.8 (3), 20.9 (CRP); Ringmer, 30.8 (AKB). E. KENT [**15**] Wye Downs, 8.6 (PWa); New Romney, 21.8 (SPC), 27.8, 11.9 (KR); Greatstone, 25-26.8 (3) (BB); Kingsgate, 25.8, 28.8 (2) (Solly, 2000); Ramsgate, 27.8, 27.9 (P. Milyon *in* Solly, 2000); Dungeness, 27.8-3.9 (11) (DW); Lydd, 27.8-5.9 (5) (KR); Densole, 11.9 (2); Dungeness, 12.9 (3) (TR); Brookland, 19.9 (SPC); Littlestone, 8.10 (KR); Folkestone Warren, 28.10 (TR). SURREY [**17**] Buckland, 29.7, 25.8, 20.9, 8.10 (CH); West Molesey 26.8 (PRW). S. ESSEX [**18**] Bradwell-on-Sea, 19.7, 19.8-23.9 (10) (Dewick, 2000); Theydon Bois, 3.9, 5.9, 8.9 (JGG per BG). N. ESSEX [**19**] Hamford Water, 28.8 (J. Clifton per BG); Frinton-on-Sea, 28.8 (BL); Takeley, 29.8 (G. Sell per BG). BERKS [**22**] Fernham, 25.8-6.9 (14) (SN). W. NORFOLK [**28**] Magdalen, 31.8 (C. Sheppard per DH). BEDFORD [**30**] Dunstable Downs, 28.8 (R. Kemp). S.E. YORK [**61**] Spurn, 8.9 (BRS). WESTMORLAND [**69**] South Walney, 14.9 (Littlewood, 2000). IOM [**71**] Andreas, 2.8 (per GDC).

CHANNEL ISLANDS Guernsey: Le Chêne, 1-8.9 (5); La Broderie, 2-21.9 (7), 20.10 (Austin, 2000).

***Orthonama obstipata* (Fab.) Gem [I]**

W. CORNWALL [**1**] St Agnes, Scilly, late July, 30.8, 10.9, 28.10 (5) (Hale & Hicks, 2000); Lizard, 25.9, 8-9.10 (2), 25-31.10 (6), 6-8.11 (40), 15.11 (MT). S. DEVON [**3**] Starcross, 24.10, 31.10 (AHD); Tuckermarsh, 29.10 (RWB). DORSET [**9**] Portland Bird Observatory, 9.7, 20.9 (3), 9.10, 28.10 (MC). IOW [**10**] Freshwater, 24.9, 7.10, 27.10, 28.10, 2.11 (SAKJ). S. HANTS [**11**] Hayling Island, 4.9 (Phillips, 2000). W. SUSSEX [**13**] Kingsham, 18.7, 24.8 (SP); Walberton, 11.9, 24.10, 31.10, 4.11 (JTR). E. SUSSEX [**14**] Rye Harbour, 2.8, 11.9, 28 and 29.10 (PT); Peacehaven, 21.9, 29.10 (2). E. KENT [**15**] Littlestone, 26.6, 20.9 (KR); Kingsgate, 7.8, 25.9, 29.9 (2) (Solly, 2000); Greatstone, 11.9 (BB); Dungeness, 12.9 (TR), 16.9, 21.9, 26.10, 28.10, 29.10 (DW); New Romney, 22.9, 9.10 (SPC), 25.10 (KR). SURREY [**17**] West Molesey, 10.7, 27.10 (PRW); South Croydon, 19.9 (GAC). S. ESSEX [**18**] Bradwell-on-Sea, 20.4, 21.9 (AJD). S.E. YORK [**61**] Kilnsea, 21.9 (DPB). IOM [**71**] Calf of Man, 21.9 (TB); Dhoon Maughold, 7.11 (per GDC).

***Thera cupressata* (Geyer) Cypress Carpet [I/R?]**

IOW [**10**] Binstead, 18.10-13.11 (11) (BJW). S. HANTS [**11**] Hayling Island, 15-25.6 (3), 31.10 (Phillips, 2000); Brockenhurst, 3.7 (JEC). E. KENT [**15**] Dungeness, 25.10 (1st Kent record) (DW).

***Triphosia dubitata* (L.) Tissue [I/?V?]**

S. DEVON [**3**] Berry Head, 31.7 (no foodplant near) (BS/BPH).

***Ennomos autumnaria* (Werneburg) Large Thorn [R?/I?]**

S. HANTS [**11**] Hayling Island, 22.8-16.9 (4) (Phillips, 2000).

***Crocallis dardoinaria* Donzel Dusky Scalloped Oak [I?/R?]**
CHANNEL ISLANDS Guernsey: Icart, June (DJW), 8-12.9 (2) (TNDP).

***Peribatodes secundaria* (Esp.) Feathered Beauty [I?]**
W. SUFFOLK [**26**] Sicklesmere, 24.9 (S. Dumican).

SPHINGIDAE

***Agrius convolvuli* (L.) Convolvulus Hawk [I]**
W. CORNWALL [**1**] Lizard, 12.9, 15.9 (3), 24-27.9 (5) (MT); St Agnes, Scilly, 13.9 (Hale & Hicks, 2000); Perranwell Station, 29.9 (A. Marshall per RDP). S. DEVON [**3**] Cullompton, 26.5 (MM); Lydford, August (2) (JH); Tuckermarsh, 17.9 (RWB); Dawlish, 20.9, 25.9 (PF). N. DEVON [**4**] Bideford, 11.9, 20.9 (ASH). DORSET [**9**] Portland Bird Observatory, 1.6, 2-19.8 (17), 29.10 (MC); Freshwater Bay, Portland, 7.9 (2) (MSP); Swanage, 17.9, 21.9 (2), 24.9 (2), 27.9 (RAS). IOW [**10**] Freshwater, 6.9 (SAKJ); Binstead, 24-26.9 (5) (BJW). W. SUSSEX [**13**] Walberton, 19-27.9 (4) (JTR); Littlehampton, 26.9 (R.E. Pratt per CRP). E. SUSSEX [**14**] Rye Harbour, 10.8, 20.9 (PT); Icklesham, 18.8, 11.9 (PJ/IH); Peacehaven, 21.8 (CRP); Ringmer, 8.9, 21.9 (AKB); Lewes, 23.9 (J. Holloway per CRP); Burgess Hill, 1.10 (TW); North Chailey, 10.10 (J. Brumell per CRP). E. KENT [**15**] Kingsgate, 20.7, 7.8, 28.8 (2), 11.9, 23.9, 26.9, 1.10 (Solly, 2000); Lydd, 29.8 (KR); Densole, 17.9, 20.9 (TR); New Romney, 20-22.9 (4) (KR); Folkestone Warren, 21.9 (TR); Margate, 1.10 (Mrs L. Bradley). S. ESSEX [**18**] Bradwell-on-Sea, 5-20.9 (7) (Dewick, 2000); Theydon Bois, 22.9 (JGG per BG). N. ESSEX [**19**] Dovercourt, 17.9, 18.9, 22.9, 23.9 (CG/PS). BERKS [**22**] Fernham, 11.9 and 19.9 (SN). E. SUFFOLK [**25**] Landguard Bird Observatory, Felixstowe, September (3) (Odin, 2000). E. NORFOLK [**27**] Eccles-on Sea, 22.8-23.9 (NB); Holt, 21.9 (G. Carrick per DH); Hindolveston, 22.9 (JC). E. GLOUCESTER [**33**] Longney, 17.8 (A. Stevens per RG). WORCESTER [**37**] Pershore, 27.9 (J. Meiklejohn). PEMBROKE [**45**] Skomer, 30.9 (Hayden, 2000). CHESTER [**58**] Hazel Grove (SJ9285), 14.9 (R. Grantham per SH). S. LANCASTER [**59**] Worsthorne, 1.7 (GG). W. LANCASTER [**60**] Lightfoot Green, 10.9, 21.9 (2) (SMP). S.E. YORK [**61**] Kilnsea, 8.7, 31.7, 13.8, 31.8, 1.9 (2) (DPB); Easington, 2.9 (per BRS); Spurn, 16.9 (BRS). MID-WEST YORK [**64**] Ripon, 9.9 (C. Fletcher). WESTMORLAND [**69**] South Walney, 11.9 (Littlewood, 2000); Witherslack, 12.9 (S. Bradley). IOM [**71**] Ramsey, 29.8, 25.9; Dhoon Maughold, 30.8; Ballacriy Colby, 30.8, 14.9; Ballaugh, 31.8; Ballaghennie Ayres, 3.9; Claughbane Ramsey, 3.9; St Johns German, 24.9 (per GDC). BANFF [**94**] Macduff, 28.8 (3) (Mrs S. Hough per RL). ELGIN [**95**] Lossiemouth, 23.9 (Mr Savage per RL). ORKNEY [**111**] 30.8-24.9 (8) (Gauld, 2000). ZETLAND [**112**] 27.8-24.9 (18) (Pennington & Rogers, 2000).
CHANNEL ISLANDS Guernsey: Le Chêne, 5.9, 8.9; Dehus Lane, 6.9; La Broderie, 6.9, 10.9, 20.9; Fort Doyle, 21.9 (Austin, 2000).

***Acherontia atropos* (L.) Death's-head Hawk [I]**
E. CORNWALL [**2**] Saltash, 27.8 (Griffiths *in* Tunmore, 2000c). S. DEVON [**3**] Staddon Point, 26.8 (Tucker *in* Tunmore, 2000c). DORSET [**9**] West Bexington, 13.6, 13.7 (RE *in* Sterling & Davey, 2000). IOW [**10**] Brighstone, 30.7 (per SAKJ). N. ESSEX [**19**] Bird's Green, 5.9 (R. Jones per BG); Dovercourt, 6.9 (PS). BUCKS [**24**] Winslow, larva in late September (Tunmore, 2000c). E. SUFFOLK [**25**] Landguard Bird Observatory, Felixstowe, 28.8 (Odin, 2000). GLAMORGAN [**41**] Bridgend, 29.9 (Mrs Miles *in* Tunmore, 2000c). DENBIGH [**50**] Betws-yn-Rhos, 26.9, dead in beehive (D. Clarkson). N.E. YORK [**62**] Redcar, 26.8 (per G. Megson). IOM [**71**] Ballasalla, 4.11, freshly dead (per GDC). ZETLAND [**112**] Lerwick, 27.8 (Pennington & Rogers, 2000).
CHANNEL ISLANDS Guernsey: St Saviour, 28.10 (Austin, 2000).

***Hyloicus pinastri* (L.) Pine Hawk [I?/V?]**

DORSET [**9**] Portland Bird Observatory, 29.5, 12.7 (MC). S.E. YORK [**61**] Kilnsea, 7.7 (DPB).

***Macroglossum stellatarum* (L.) Humming-bird Hawk [I]**

W. CORNWALL [**1**] St Agnes, Scilly, 27.4, 28.4 (2) (Hale & Hicks, 2000); Lizard, 7.8, 13-17.9 (4), 9-12.10 (3), 27.10 (MT). E. CORNWALL [**2**] Ladock, 28.8 (J. Rule per RDP). S. DEVON [**3**] Prawle Point, May (M. Catt per RFM); Paignton, 26.6 (K. Brown per RFM); Chudleigh, 7.7, 29.9 (P. Hurst per RFM); Tuckermarsh, 12.7 (RWB); Holne, 28.7 (ME); Slapton, 12.8 (JHC); Berry Head, Brixham, 20.8 (2), 2.9 (ME); Teignmouth, 20.9 (RFM). N. DEVON [**4**] Hartland Point, 2.10 (PBu). DORSET [**9**] Portland, 31.5-28.10 (a very poor year, MC). IOW [**10**] Binstead, 3.6-3.10 (7) (BJW); Freshwater, 11.6 (DBW). S. HANTS [**11**] Hayling Island, 21.9 (Phillips, 2000). N. HANTS [**12**] Medstead, 16.3 (L. Frost per HM); Selborne, mid-August and early September (AA); Basingstoke, 19.9 (AHD). W. SUSSEX [**13**] Chichester, 8.1 (in a shop) (G. Barham per CRP), 12.2 (J. Russell-Smith per CRP), 17.7 (M. Perry per CRP); Hove, 17.3 (3) (RMC); Ford, 28.6 (R. Gahagan per CRP); Pagham, 23.8; Thorney Island, 27.8 (TW); Walberton, 9.9 (JTR). E. SUSSEX [**14**] Peacehaven, 26.5, 6-16.6 (5), 11.8, 19.8, 28.8, 6-12.9 (6), 21-22.9 (4), 28.9 (2), 11.10 (2) (CRP); Westfield, 31.5, 15.7 (R. Hobbs per CRP); Rye Harbour, 5.6, 9.7, 8.8, 19.8 (2), 25.8, 3.9, 24.9 (PT); Ringmer, 6.6, 11.9, 26.9 (AKB); Saltdean, 13.7 (per Booth Museum per CRP). E. KENT [**15**] Thanet, 15.6 (2), 5.7, 7.7, 11.9, 25.10 (Solly, 2000); Dungeness, 4.7, 11.7, 11.8, 16.8, 21.8, 30.8, 28.9 (per Dungeness Bird Observatory); Lydd, 20.8 (KR). W. KENT [**16**] Otford, 6.9 (larva), 9.9 (adult) (M. Matthews). SURREY [**17**] Croydon, 9.9 (1) (B. O'Brien); Rickwood Park, 11.10 (P. Follett per GAC). S. ESSEX [**18**] Corringham, 15.6 (Mrs King); Writtle, 20.6 (M.J. Green per BG); Bradwell-on-Sea, 3.7-10.10 (69), 14.7 (7 larvae) (Dewick, 2000); Ingatestone, 23.9 (G. Smith per BG). N. ESSEX [**19**] Dovercourt, 6.7, 12.9 (CG/PS); Jaywick, 15.7, 17.7, 25.7 (JY); Langenhoe, 25.7 (H. Owen per BG); Frinton-on-Sea, 18.9 (BL); Colchester, 5.9 (BG). E. SUFFOLK [**25**] Martlesham Heath, 18.7 (full grown larva) (HM); Sizewell, 30.7 (2 larvae) (MSP); Landguard Bird Observatory, Felixstowe, 12.9 (Odin, 2000). E. NORFOLK [**27**] Sheringham Park, 13.6, 30.6 (K. Zealand per DH); Hindolveston, 20.6 (JC); Caister-on-Sea, 17.7 (P. Heath per DH); Hainford, 24.7 (DH); Barnham Broom, 24.7, 17.8 (J. Geeson per DH); Hethersett, 22.8 (S. Parsett per DH); Norwich, 9.9 (M. Brooks per DH); Filby, 17.9 (J. Saul per DH); Bradwell, 26.9 (C. Walker per DH). W. NORFOLK [**28**] Boughton, 6.7 (per DH); Caston, 28.9 (G. Haggett per DH); Heacham, 28.9 (P. Cobb per DH). E. GLOUCESTER [**33**] Cheltenham, 3.6 (D. Haigh per RG); Edge Common, 22.6 (D. Rey per RG); Longney, 18.7 (A. Stevens per RG); Quedgely, 5.9 (M. King per RG); Gloucester, 16.9 (D. Rey per RG), and 29.9 (R. Pearce per RG). PEMBROKE [**45**] Skomer, 2.4, 25.6-7.7 (4) (Hayden, 2000). DERBY [**57**] Matlock, 3.7 (BLS). CHESTER [**58**] Higher Poynton (SJ945838), 5.7 (SH). S. LANCASTER [**59**] Waterloo, 22.12 (I. Wolfendon per SMP). S.E. YORK [**61**] Kilnsea, 18.7, 14.10 (DPB). IOM [**71**] Kirk Michael, 21.6; Port Erin, 26.6; Ballaugh, 19.7; Patrick, 6.8; Point of Ayre, 15.8; Sulby, 15.8 (3) (per GDC); Calf of Man, 27.8-21.9 (5) (TB); Claughbane Ramsey, 25.9 (3) (per GDC). BANFF [**94**] Portnockie, 27.7 (M. Roberts per RL).

WEXFORD [**H12**] Ballyteigne Burrows, 11.7 (6, including a pair in cop.); Grange Strand, 13.7; Curracloe Dunes, 14.7); The Raven, 14.7 (GRE).

CHANNEL ISLANDS Guernsey: 5.1-4.11 (37) (Austin, 2000).

***Hyles euphorbiae* (L.) Spurge Hawk [I]**

CHANNEL ISLANDS L'Eree, Guernsey, 6.8 (DJW).

***Hyles gallii* (Rott.) Bedstraw Hawk [I]**

E. KENT [**15**] Broadstairs, 14.8 (GM). S. ESSEX [**18**] Southend, 2.10 (larva) (DGD). E. SUFFOLK [**25**] Minsmere, 26.6 (Anon., 2000); Kelsale, 27.8 (Green *in* Tunmore, 2000c). E. NORFOLK [**27**] Holt, 27.5 (G. Carrick per DH). S.E. YORK [**61**] Kilnsea, 2.8 (DPB).

***Hyles livornica* (Esp.) Striped Hawk [I]**

IOW [**10**] Bonchurch, 6.1 (Knill-Jones, 2000). SURREY [**17**] Farnham, June, a larva found on antirrhinum (C. Wiskin). DERBY [**57**] Matlock, 1.6 (BLS).

THAUMETOPOEIDAE

***Thaumetopoea processionea* (L.) Oak Processionary [I]**

CHANNEL ISLANDS Guernsey: Le Chêne, 23.8 (TNDP).

ARCTIIDAE

***Pelosia muscerda* (Hufn.) Dotted Footman [I]**

E. KENT [**15**] Dymchurch, 4.8 (JO).

***Eilema sororcula* (Hufn.) Orange Footman [I?/V?]**

E. KENT [**15**] Dungeness, 9.4 (per SPC); Kingsgate, 27.5 (Solly, 2000). S. ESSEX [**18**] Theydon Bois, 5.5, 19.5 (2) (JGG per BG); Norwood Fyfield, 9.5 (G. Smith per BG). N. ESSEX [**19**] Dovercourt, 20.5 (CG); Coggeshall, 28.5 (BG).

***Lithosia quadra* (L.) Four-spotted Footman [I]**

W. CORNWALL [**1**] Cadgwith, 10.10 (Tunmore, 2000b). DORSET [**9**] Portland Bird Observatory, 12.9 (MC). IOW [**10**] Bonchurch, 6.7 (Knill-Jones, 2000). IOM [**71**] Ballacriy Colby, 19.7 (per GDC).

CHANNEL ISLANDS Guernsey: Le Chêne, 5.7, 5 and 6.9; La Broderie, 31.8 (Austin, 2000).

***Euplagia quadripunctaria* (Poda) Jersey Tiger [I?/R(t)?]**

E. SUSSEX [**14**] Rye Harbour, 3.8 (2), 4.8, 10.8, 16.8 (PT).

***Callimorpha dominula* (L.) Scarlet Tiger [I?]**

E. SUSSEX [**14**] Rye Harbour, 5.7 (PT).

NOLIDAE

***Meganola albula* ([D. & S.]) Kent Black Arches [I?/V?]**

N. ESSEX [**19**] Kirby-le-Soken, 6.7 (PBe); Abberton Reservoir, 24.7 (S.D. Wood per BG). E. SUFFOLK [**25**] Landguard Bird Observatory, Felixstowe, 16.7, 4.8 (Odin, 2000).

***Nola aerugula* (Hb.) Scarce Black Arches [I]**

E. SUSSEX [**14**] Rye Harbour, 2.7 (2) (PT); Icklesham, 4.7 (2) (PJ/IH). E. KENT [**15**] Dungeness, 3.7 (DW); New Romney, 4.7 (SPC); Lydd, 5.7 (KR). E. NORFOLK [**27**] Eccles-on-Sea, 12.7 (NB).

NOCTUIDAE

***Agrotis crassa* (Hb.) Great Dart**

W. CORNWALL [**1**] Cury, 11.7 (R.T. Johns).

***Actebia praecox* (L.) Portland Moth [I?/V?]**

E. SUSSEX [**14**] Icklesham, 6.9 (PJ).

Eurois occulta **(L.) Great Brocade [I]**
E. KENT [**15**] New Romney, 1.8 (KR). S.E. YORK [**61**] Spurn, 20.8 (BRS). ORKNEY [**111**] 21.8 (Gauld, 2000).

Cerastis leucographa **([D. & S.]) White-marked [I?]**
E. KENT [**15**] Lydd, 4.4 (KR).

Sideridis albicolon **(Hb.) White Colon [R?]**
N. ESSEX [**19**] Dovercourt, 17.7 (CG).

Hecatera dysodea **([D. & S.]) Small Ranunculus [I?/V?]**
E. SUFFOLK [**25**] Landguard Bird Observatory, Felixstowe, 16.6 (Odin, 2000).

Hadena luteago **([D. & S.]) Barrett's Marbled Coronet [I?/V?]**
DORSET [**9**] Portland, 25.6 (D. Walbridge *in* Sterling & Davey, 2000).

Orthosia miniosa **([D. & S.]) Blossom Underwing [I?]**
W. CORNWALL [**1**] Lizard, 31.3 (MT). DORSET [**9**] Portland Bird Observatory, 1.4 (8), 2.4, 4.4 (3) (MC); Wimborne, 2.4 (J. Fradgley *in* Sterling & Davey, 2000); West Bexington, 3.4 (RE *in* Sterling & Davey, 2000); Tidmoor Range, 4.4 (PHS); Povington Wood, 8.4 (6) (PAD). E. SUSSEX [**14**] Icklesham, 1.4 (IH). E. KENT [**15**] Kingsgate, 1.4, 2.4 (2), 3.4 (4), 4.4, 8.4 (3); Dymchurch, 1.4, 4.4 (JO); Dungeness, 1.4 (3), 2.4 (KR); 3.4 (2) (DW/AGJB); New Romney, 1.4 (2), 3.4, 9.4 (KR/SPC); Densole, 2.4 (TR); Lydd, 3.4 (KR). S. ESSEX [**18**] Bradwell-on-Sea, 1-6.4 (13) (Dewick, 2000); Thundersley, 2.4 (DGD). N. ESSEX [**19**] Wivenhoe, 31.3 (M.P. Jackson per BG); St Osyth, 1.4 (2), 2.4 (4) (R.W. Arthur per BG); Mashbury, 3.4 (M. Tarrant per BG); Jaywick, 4.4 (JY); Kirby-le-Soken, 6.4, 7.4 (PBe); Frinton-on-Sea, 6.4 (BL). BERKS [**22**] Fernham, 3.4 (SN). E. NORFOLK [**27**] Eccles-on-Sea, 2, 8 and 11.4 (NB); Catfield, 4.4 (AB). W. NORFOLK [**28**] Great Ellingham, 2.4 (C. Knott per DH); Caudlesprings, 4.4 (G. Nobes per DH); Stiffkey, 5.4, 9.4 (T. Crafer per DH).

Orthosia populeti **(Fab.) Lead-coloured Drab [I?]**
W. CORNWALL [**1**] Lizard, 5.4 (MT).

Mythimna albipuncta **([D. & S.]) White-point [I/R?]**
S. DEVON [**3**] Slapton Ley, 2.7 (BPH); Colaton Raleigh Common, 29.8 (PF). DORSET [**9**] Durlston Head, 27.5 (2) and 3.9 (2) (SN); Portland Bird Observatory, 10-25.6 (7), 31.7-21.9 (41) (MC). IOW [**10**] Binstead, 8.8, 11.8, 18.8 (BJW). S. HANTS [**11**] Hayling Island, 7.8-13.9 (19) (Phillips, 2000). W. SUSSEX [**13**] Walberton, 7.6, 8.8-3.11 (32) (JTR); Kingsham, 4.8-8.9 (6); Pagham, 29.8 (SP). E. SUSSEX [**14**] Peacehaven, 18.5, 7.8-10.9 (27) (CRP); Barcombe, 21.5 (J. Shaugnessy per CRP); Icklesham, 1.6-7.9 (34) (PJ); Seaford Head, 3.6 (SC); Rye Harbour, 6.6-19.9 (36) (PT), 29.8 (JHC); Eastbourne, 7.8 (2) (MSP). E. KENT [**15**] Folkestone Warren, 20.5; Densole, 3.6, 17.6 (TR); Kingsgate, 22.7-27.9 (29) (Solly, 2000); Newington, 2.9 (REL). S. ESSEX [**18**] Bradwell-on-Sea, 27.5-29.6 (16), 3.8-27.9 (84) (Dewick, 2000); Bradwell St Peters, 22.8 (G. Smith per BG). N. ESSEX [**19**] Beaumont-cum-Moze, 1.6, 3.9, 5.9 (2) (JBF); Kirby Cross, 4.6 (R. Marsh per BG); Dovercourt, 11.6 (CG); Frinton-on-Sea, 18.8 (BL); Jaywick, 30.8; 31.8 (JY). E. SUFFOLK [**25**] Landguard Bird Observatory, Felixstowe, 25.5 (Odin, 2000). E. NORFOLK [**27**] Catfield, 19.6 (AB); Eccles-on-Sea, 1.9 (NB). NORTHAMPTON [**32**] Daventry, 17.7 (K. Williams per BG).

Mythimna vitellina **(Hb.) Delicate [I/R(t)?]**
W. CORNWALL [**1**] St Agnes, Scilly, 10.9 (5) (Hale & Hicks, 2000); Lizard, 12-17.9 (6), 30.9, 3.10, 24.10, 1.11 (MT). S. DEVON [**3**] Tuckermarsh, 17 and 18.9 (RWB).

N. DEVON [**4**] Hartland Point, 13.9 (DGG). DORSET [**9**] Portland Bird Observatory, 9.8-27.10 (66) (MC); Swanage, 21-22.9 (2) (RAS). IOW [**10**] Binstead, 18.5 (BJW); Freshwater, 23.6, 3.7, 25.9 (SAKJ). S. HANTS [**11**] Hayling Island, 14.9 (Phillips, 2000). W. SUSSEX [**13**] Arundel, 19.6 (JHC); Walberton, 17-24.9 (8) (JTR); Ferring, 20.9 (THF). E. SUSSEX [**14**] Icklesham, July (3), August (1), October (2) (PJ); Rye Harbour, 15-22.9 (11) (PT); Peacehaven, 19.9, 26.9 (CRP); Ringmer, 29.9 (2) (AKB). E. KENT [**15**] Kingsgate, 7.8, 28.9 (3) (Solly, 2000); Lydd, 6.9, 25.9, 7.10 (KR); Littlestone, 12.9, 19.9, 22.9 (KR); New Romney, 19.9, 20.9, 23.9 (KR); Greatstone, 20.9, 25.10 (BB); Dungeness, 20.9 (KR), 21.9, 23.9 (DW); Folkestone Warren, 21.9; Densole, 22.10 (TR); Newington, 29.10 (REL). SURREY [**17**] Lingfield, 19.9 (JHC). S. ESSEX [**18**] Bradwell-on-Sea, 21 and 22.9, 2.10, 10.10 (Dewick, 2000). E. SUFFOLK [**25**] Landguard Bird Observatory, Felixstowe, 24.9 (Odin, 2000). E. NORFOLK [**27**] Barnham Broom, 17.9 (J. Geeson per DH); Eccles-on-Sea, 20-22.9 (NB). PEMBROKE [**45**] Skomer, 22.8, 11.9 (Hayden, 2000). S.E. YORK [**61**] Kilnsea, 9.9 (DPB). IOM [**71**] Ballakinnag Michael, 23.7; Dhoon Maughold, 3 and 4.9 (per GDC).

CHANNEL ISLANDS Guernsey: 1.6-20.10, 80 moths from four sites (Austin, 2000).

***Mythimna pudorina* ([D. & S.]) Striped Wainscot [R?]**
N. ESSEX [**19**] Dovercourt, 22.6 (CG).

***Mythimna l-album* (l.) L-album Wainscot [I]**
S. ESSEX [**18**] Bradwell-on-Sea, 14-24.9 (4) (AJD); Bradwell St Peters, 19.9 (G. Smith per BG). N. ESSEX [**19**] St Osyth, 7.9 (R.W. Arthur/PS); Dovercourt, 26.9 (D.M. Anthoney per BG).

***Mythimna unipuncta* (Haw.) White-speck [I]**
W. CORNWALL [**1**] Lizard, 3.4, 15-30.9 (5), 25.10-30.11 (13); St Agnes, Scilly, 30.8 (3), 10.9 (2), 9.10 (11), 28.10 (11), 7.11 (17) (Hale & Hicks, 2000); Coverack, 18.9 (MT). S. DEVON [**3**] Abbotskerswell, 15.9 (BPH). DORSET [**9**] Portland Bird Observatory, 29.1, 15.9-9.10 (7), 29.11 (MC). IOW [**10**] Freshwater, 24.9, 3.11, 30.11 (SAKJ). E. KENT [**15**] Kingsgate, 29.9 (Solly, 2000). IOM [**71**] Calf of Man, 14.9 (TB).

***Mythimna loreyi* (Dup.) Cosmopolitan [I]**
W. CORNWALL [**1**] Lizard, 2-8.11 (8) (MT). DORSET [**9**] Portland Bird Observatory, 4.8, 28.10, 4.11 (MC); Wyke Regis, 8.11 (D. Foot *in* Sterling & Davey, 2000); West Bexington, 8.11, 14.11 (2) (RE *in* Sterling & Davey, 2000). IOW [**10**] (site not given) 8.11 (Knill-Jones, 2000). E. SUSSEX [**14**] Rye Harbour, 19.9 (PT).

***Leucochlaena oditis* (Hb.) Beautiful Gothic [I?]**
E. SUSSEX [**14**] Rye Harbour, 3.10 (PT).

***Xylena vetusta* (Hb.) Red Sword-grass [I?]**
N. ESSEX [**19**] Skippers Island, 7.10 (R. Marsh per BG).

***Xylena exsoleta* (L.) Sword-grass [I?/V?]**
ZETLAND [**112**] Fair Isle, 8.10 (Pennington & Rogers, 2000).

***Dryobota labecula* (Esp.) Oak Rustic [I]**
IOW [**10**] Freshwater, 15.10 (Rogers, 2000), 22.11 (SAKJ).

***Trigonophora flammea* (Esp.) Flame Brocade [I]**
DORSET [**9**] West Bexington, 25.10, 3.11 (RE *in* Sterling & Davey, 2000). IOW [**10**] Freshwater, 26.10 (SAKJ), and 28.10 (DBW).

***Conistra erythrocephala* ([D. & S.]) Red-headed Chestnut [I]**
DORSET [**9**] Portland Bird Observatory, 3.11 (MC).

***Xanthia ocellaris* (Borkh.) Pale-lemon Sallow [I?]**
E. KENT [**15**] Kingsgate, 24.9 (Solly, 2000).

***Cryphia algae* (Fabr.) Tree-lichen Beauty [I]**
S. HANTS. [**11**] Northney, Hayling Island, 31.7 (JWP).

***Enargia paleacea* (Esp.) Angle-striped Sallow [I]**
E. NORFOLK [**27**] Holt Lowes, 7.7 (JC).

***Luperina dumerilii* (Dup.) Dumeril's Rustic [I]**
CHANNEL ISLANDS Guernsey: Icart Point, 1.9 (TNDP).

[*Hoplodrina superstes* (Ochs.) Powdered Rustic
E. KENT [15] Sheppey – Three specimens were reported as occurring in July in Fergusson (2001). It was later found that an error had occurred when entering the species' number and so this published record is erroneous.]

***Spodoptera exigua* (Hb.) Small Mottled Willow [I]**
W. CORNWALL [**1**] Lizard, 15.9, 3.11 (MT). DORSET [**9**] Portland Bird Observatory, 31.7, 19 and 20.9 (MC). W. SUSSEX [**13**] Kingsham, 13.6 (SP); Ferring, 20.9 (THF). E. SUSSEX [**14**] Hassocks, 16.9 (D. Dey per CRP); Peacehaven, 21.9 (CRP). E. KENT [**15**] Densole, 20.9 (TR); Dungeness, 25.9 (DW). S. ESSEX [**18**] Bradwell-on-Sea, 31.7, 21.9 (2) (AJD). S. LANCASTER [**59**] Longton, 17.7 (E. Roskell per SMP).

***Helicoverpa armigera* (Hb.) Scarce Bordered Straw [I]**
W. CORNWALL [**1**] Lizard, 9.8, 24-25.10 (2) (MT). S. DEVON [**3**] Berry Head, 30.6, a larva feeding on the seeds of yellow rattle (BPH); Colaton Raleigh Common, 29.8 (PF); Dawlish, 20.9, 7.10 (PF); Tuckermarsh, 11.11 (RWB). N. DEVON [**4**] Bideford, 8 and 9.9 (ASH). DORSET [**9**] Portland Bird Observatory, 31.8-27.10 (7) (MC). IOW [**10**] Bonchurch, 5.1 (Knill-Jones, 2000); Binstead, 8.8, 11.9, 1.11, 13.11 (BJW); Freshwater, 21.9, 25.9 (SAKJ). W. SUSSEX [**13**] Kingsham, 19.9 (SP); Walberton, 27 and 28.9, 31.10-8.11 (3) (JTR). E. SUSSEX [**14**] Peacehaven, 2 and 3.9, 25.9 (CRP); Rye Harbour, 17.9, 7.10 (PT). E. KENT [**15**] Littlestone, 29.8 (KR); Kingsgate, 16.9, 23.9 (2), 25.9, 27.9, 28.9 (3) (Solly, 2000); New Romney, 21.9 (2) (KR); Ramsgate, 24.9 (P. Milton *in* Solly, 2000). S. ESSEX [**18**] Bradwell-on-Sea, 5.9, 7.9, 19.9, 9.10, 11.10 (Dewick, 2000). N. ESSEX [**19**] Dovercourt, 24.9, 25.9 (2), 26.9 (CG); Langenhoe, 31.10 (H. Owen per BG). E. SUFFOLK [**25**] Landguard Bird Observatory, Felixstowe, 22 and 23.9, 27.10 (Odin, 2000). E. NORFOLK [**27**] Eccles-on-Sea, 7.9, 24.9 (NB). S. LANCASTER [**59**] Worsthorne, 21.9 (GG); Pennington, 23.9 (PC). S.E. YORK [**61**] Spurn, 23.9 (BRS). IOM [**71**] Calf of Man (SC1565), 10.9 (TB).
CHANNEL ISLANDS Guernsey: Le Chêne, 30.8; La Broderie, 1-12.9 (5); L'Ancresse, 30.10 (Austin, 2000).

***Heliothis peltigera* ([D. & S.]) Bordered Straw [I]**
W. CORNWALL [**1**] Loe Pool, 10.4 (Tunmore, 2000b). S. DEVON [**3**] Teignmouth, 30.5 (RFM); Tuckermarsh, 29.8 (RWB). DORSET [**9**] Cheyne Weare, Portland, 4.8 (1 at buddleia) (MSP). IOW [**10**] (site not given) 6.8 (Knill-Jones, 2000). W. SUSSEX [**13**] Walberton, 13.8 (JTR). E. SUSSEX [**14**] Rye Harbour, 8.8 (2), 5.9, 11.9 (PT); Icklesham, 6.9 (PJ). E. KENT [**15**] Dungeness, 9.6, 14.6, 16.6 (DW/KR); Greatstone, 11.6 (BB); New

Romney, 19.7 (KR); Kinsgate, 24.7, 26.8 (Solly, 2000); Ramsgate, 9.8 (P. Milton *in* Solly, 2000). E. GLOUCESTER [**33**] Guiting Wood, 5.8 (J. Brock per RG).
CHANNEL ISLANDS Guernsey: Le Chêne, 29.5 (TNDP); Mount Durand, 6.8 (M. Lawlor *in* Austin, 2000).

Heliothis nubigera **(H.-S.) Eastern Bordered Straw [I]**
S. DEVON [**3**] Thorverton, 5.1 (K. Bailey).

Schinia scutosa **([D. & S.]) Spotted Clover [I]**
E. KENT [**15**] Kingsgate, 7.8 (Solly, 2000). S.E. YORK [**61**] Kilnsea, 3.8 (DPB).

Eublemma ostrina **(Hb.) Purple Marbled [I]**
W. CORNWALL [**1**] St Agnes, Scilly, 30.8 (Hale & Hicks, 2000). S. DEVON [**3**] Hopes Nose, Torquay, 11.6 (BD); Strete Gate Beach, Slapton, 2.7 (larvae) (RJH), 24.7 (larva in carline thistle, adult reared), 7.8 (pupa, reared) (BPH), 12.8 (pupae) (JHC); Branscombe, 27.7 (larvae) (RFM). DORSET [**9**] Swanage, 12.6 (R. Cox *in* Sterling & Davey, 2000); Portland Bird Observatory, 14.6 (MC); Freshwater Bay, Portland, 26.7 (larvae) (MSP); Cheyne Weare, Portland, 27.7 (larvae), 3.8 (pupae), 4.8 (1 at dusk) (MSP); Portland, 9.8 (larvae) (PHS); Church Ope Cove, Portland, 16.8 (1 at dusk) (MSP); Portland, 19.8 (larvae) (RRC). N. HANTS [**12**] Selborne, 1.11 (AA). E. GLOUCESTER [**33**] Stroud, 18.6 (C. Attaway per RG).

Eublemma parva **(Hb.) Small Marbled [I]**
W. CORNWALL [**1**] Loe Pool, 31.10 (R. Howard *in* Tunmore, 2000b). S. DEVON [**3**] Orley Common, Ipplepen, 9.6 (ME). IOM [**71**] Dhoon Maughold, 25.9 (per GDC).

Deltote bankiana **(Fab.) Silver Barred [I?/V?]**
E. KENT [**15**] Dymchurch, 4.7 (JO). S. ESSEX [**18**] Bradwell-on-Sea, 2.6, 2.7 (Dewick, 2000).

Earis biplaga **(Walk.) Spiny Bollworm [I]**
E. KENT [**15**] Dungeness, 11.9 (1st Kent record) (DW).

Earias insulana **(Boisd.) Egyptian Bollworm [I]**
DORSET [**9**] Portland Bird Observatory, 24.8 (1st Dorset record) (MC).

Chrysodeixis chalcites **(Esp.) Golden Twin-spot [I]**
E. KENT [**15**] Kingsgate, 7.8 (2), 14.8, 23.8, 25.8, 28.8 (Solly, 2000); Ramsgate, 16.9, 30.9 (P. Milton *in* Solly, 2000). S. ESSEX [**18**] Bradwell-on-Sea, 1.9 (AJD). N. ESSEX [**19**] Dovercourt, 15.9 (CG).

Trichoplusia ni **(Hb.) Ni Moth [I]**
E. KENT [**15**] New Romney, 9.8 (KR).

Thysanoplusia orichalcea **(Fab.) Scarce Burnished Brass [I]**
S. DEVON [**3**] Dawlish, 20.9 (PF). E. KENT [**15**] Kingsgate, 4.11 (Solly, 2000).

Macdunnoughia confusa **(Steph.) Dewick's Plusia [I]**
W. CORNWALL [**1**] Lizard, 1.10 (MT). S. HANTS. [**11**] Hayling Island, 25.9 (P. Durnell per JWP). S. ESSEX [**18**] Bradwell-on-Sea, 20.9 (AJD). MIDDLESEX [**21**] Staines, 9.10 (JM).
CHANNEL ISLANDS Guernsey: La Broderie, 7.9 (P. Costen *in* Austin, 2000).

Catocala fraxini **(L.) Clifden Nonpareil [I]**
DORSET [**9**] Puddletown, 20.9 (H. Wood Homer *in* Sterling & Davey, 2000). SALOP [**40**] Ellesmere, 5.8 (Hill *in* Tunmore, 2000c).

***Tyta luctuosa* ([D. & S.]) Four-spotted [I?]**
E. KENT [**15**] Dymchurch, 10.7 (JO).

***Parascotia fuliginaria* (L.) Waved Black [I?/V?]**
E. KENT [**15**] New Romney, 6.7 (per SPC).

***Hypena obsitalis* (Hb.) Bloxworth Snout [I?/R(t)?]**
W. CORNWALL [**1**] Lizard, 26.10 (MT). DORSET [**9**] Portland, 11.8 (D. Walbridge *in* Sterling & Davey, 2000); Portland Bird Observatory, 21.9 (MC); Portland, 27.10 (MSP).

***Pechipogo plumigeralis* (Hb.) Plumed Fan-foot [I?/R(t)?]**
W. SUSSEX [**14**] Rye Harbour 1.8 (PT). E. KENT [**15**] Greatstone, 20.7 (BB).

***Trisateles emortualis* ([D. & S.]) Olive Crescent [I]**
S. HANTS. [**11**] Grange Copse, Gosport, 8.7 (L. Marshall). E. KENT [**15**] Hamstreet, 9.7 (Kolaj *in* Tunmore, 2000c). S. ESSEX [**18**] Bradwell-on-Sea, 4.7 (Dewick, 2000).

ANNEX 2: SELECTED RECORDS OF COMMONER SPECIES

YPONOMEUTIDAE

***Plutella xylostella* (L.)**
Annual counts from fixed traps include: S. DEVON [**3**] Starcross (RIS) – 66 (AHD); DORSET [**9**] Portland Bird Observatory – 294 (MC); S.E. YORK [**61**] Spurn – 5 (BRS).
Earliest dates: S. DEVON [**3**] Exeter, 1.3 (PBu); IOM [**71**] Calf of Man, 19.3 (TB); S. LANCASTER [**59**] Pennington, 29.4 (PC)
Latest dates: N. HANTS [**12**] Selborne, 29.11 (AA); DORSET [**9**] Portland Bird Observatory, 30.11 (MC).

PYRALIDAE

***Udea ferrugalis* (Hb.)**
Annual counts from fixed traps include: S. DEVON [**3**] Starcross (RIS) – 23 (AHD); DORSET [**9**] Portland Bird Observatory – 206 (MC); S.E. YORK [**61**] Spurn – 1 (BRS).
Earliest dates: CHANNEL ISLANDS Guernsey, 20.1, 12.3 (Austin, 2000); W. CORNWALL [**1**] Lizard, 11.3 (Tunmore, 2000b); DORSET [**9**] Portland Bird Observatory, 31.5 (MC).
Latest dates: W. LANCASTER [**60**] Claughton (SD5666), 3.11 (MB); CHANNEL ISLANDS Guernsey, 7.11 (Austin, 2000); S.E. YORK [**61**] Spurn, 8.11 (BRS); DORSET [**9**] Portland Bird Observatory, 16.11 (MC); IOW [**10**] Freshwater, 23.11 (SAKJ); W. CORNWALL [**1**] Lizard, 26.11 (MT); S. DEVON [**3**] Exeter, 27.11 (PBu).
Other significant records: BANFF [**94**] Ordiquhill, 24.10 (RL).

***Nomophila noctuella* ([D. & S.])**
Annual counts from fixed traps include: S. DEVON [**3**] Starcross (RIS) – 3 (AHD); DORSET [**9**] Portland Bird Observatory – 702 (MC); S.E. YORK [**61**] Spurn – 14 (BRS).
Earliest dates: DORSET [**9**] Portland Bird Observatory, 30.3 (MC); S. LANCASTER [**59**] Pennington, 13.5 (PC); S. DEVON [**3**] Exeter, 29.5 (PBu).
Latest dates: W. CORNWALL [**1**] Lizard, 2.12 (MT).
Other significant records: DORSET [**9**] Portland Bird Observatory, 22.9 (120) (MC); W. SUSSEX [**13**] Littlehampton, 22.9 (c.100) (R.E. Pratt per CRP).

NYMPHALIDAE

***Vanessa atalanta* (L.) Red Admiral**

Earliest dates: S. ESSEX [**18**] Bradwell-on-Sea, 27.3 (Dewick, 2000); E. KENT [**15**] Thanet, 28.3 (Solly, 2000); DORSET [**9**] Portland Bird Observatory, 16.4 (MC); S. DEVON [**3**] Tuckermarsh, 25.6 (RWB).

Latest dates: W. CORNWALL [**1**] Cadgwith, 24.11 (MT); W. SUSSEX [**13**] & E. SUSSEX [**14**] several, 24-27.11 (per CRP); E. KENT [**15**] Folkestone Warren, 7.12 (TR); S. ESSEX [**18**] Bradwell-on-Sea, 9.12 (Dewick, 2000); DORSET [**9**] Portland Bird Observatory, 14.12 (MC); S. DEVON [**3**] Teignmouth, 27.12 (RFM).

Other significant records: N. HANTS [**12**] Basingstoke, 19.9, "small" migration to south-west (AHD). BANFF [**94**] Ordiquhill, 22.9, 74 flew south in one hour (RL). S.E. YORK [**61**] Spurn, 28.9, c.500 flew south (BRS).

***Vanessa cardui* (L.) Painted Lady**

Earliest dates: CHANNEL ISLANDS Guernsey: 6.1, 11.4 (Austin, 2000); S. ESSEX [**18**] Bradwell-on-Sea, 6.1 (Dewick, 2000); S.E. YORK [**61**] Spurn, 29.5 (BRS); DORSET [**9**] Portland Bird Observatory, 1.6 (MC); E. KENT [**15**] Densole, 7.6 (TR).

Latest dates: SURREY [**17**] Lingfield, 1.10 (JHC); S. ESSEX [**18**] Leigh-on-Sea, 1.10 (DGD); S.E. YORK [**61**] Spurn, 2.10 (BRS); S. ESSEX [**18**] Bradwell-on-Sea, 3.10 (Dewick, 2000); E. KENT [**15**] Thanet, 11.10 (Solly, 2000); DORSET [**9**] Portland Bird Observatory, 12.10 (MC).

Other significant records: BANFF [**94**] Ordiquhill, 22.9 (RL).

NOCTUIDAE

***Agrotis ipsilon* (Hufn.) Dark Swordgrass**

Annual counts from fixed traps include: DORSET [**9**] Portland Bird Observatory – 674 (MC).

Earliest dates: W. CORNWALL [**1**] Loe Pool, 5.1 (Tunmore, 2000b); IOW [**10**] Bonchurch, 6.1 (J. Halsey); DORSET [**9**] Portland Bird Observatory, 30.3 (MC); IOM [**71**] Andreas, 5.4 (per GDC); CHANNEL ISLANDS Guernsey, 5.4 (Austin, 2000); SURREY [**17**] Lingfield, 23.4 (JHC); S. ESSEX [**18**] Ingatestone, 24.4 (G. Smith per BG); S.E. YORK [**61**] Spurn, 24.4 (BRS).

Latest dates: N. ESSEX [**19**] Langenhoe, 31.10 (H. Owen per BG); SURREY [**17**] Lingfield, 4.11 (JHC); DORSET [**9**] Portland Bird Observatory, 9.11 (MC); W. CORNWALL [**1**] Lizard, 30.11 (MT).

***Peridroma saucia* (Hb.) Pearly Underwing**

Annual counts from fixed traps include: DORSET [**9**] Portland Bird Observatory – 93 (MC); S.E. YORK [**61**] Spurn – 6 (BRS).

Earliest dates: S. DEVON [**3**] Plymouth, 2.1 (JHC); IOM [**71**] Calf of Man (SC1565), 31.3 (TB); DORSET [**9**] Portland Bird Observatory, 3.4 (MC); W. CORNWALL [**1**] Lizard, 4.4 (MT).

Latest dates: E. KENT [**15**] Densole, 3.11 (TR), Dungeness, 7.11 (DW); S. ESSEX [**18**] Bradwell-on-Sea, 8.11 (Dewick, 2000); DORSET [**9**] Portland Bird Observatory, 30.11 (MC); W. CORNWALL [**1**] Lizard, 5.12 (2) (MT).

Other significant records: IOM [**71**] Andreas, 24.6 (per GDC).

***Autographa gamma* (L.) Silver Y**

Annual counts from fixed traps include: S. DEVON [**3**] Starcross (RIS) – 7 (AHD); DORSET [**9**] Portland Bird Observatory – 1958 (MC).

Earliest dates: W. CORNWALL [**1**] Loe Pool, 4.1 (Tunmore, 2000b); S. DEVON [**3**] Exeter, 29.3 (PBu); DORSET [**9**] Portland Bird Observatory, 5.4 (MC).

Latest dates: W. CORNWALL [**1**] Lizard, 5.12 (MT); IOW [**10**] Freshwater, 17.12 (SAKJ). Other significant records: DORSET [**9**] Portland Bird Observatory, 4.9 (202) (MC); S.E. YORK [**61**] Spurn, 10.7 (c.200), 1.8 (c.500), 4.8 (c.1000), 26-29.8 (100-300/day) (BRS). IOM [**71**] Calf of Man, 29.9 (30) (TB).

Initials of recorders

AA	A. Aston
AB	A. Beaumont (per DH)
AGJB	A. G. J. Butcher
AHD	A. H. Dobson
AJD	A. J. Dewick
AKB	A. K. Batten (per CRP)
ASH	A. S. Henderson (per RFM)
B&LS	B. & L. Brewsher (per RFM)
BB	B. Banson (per SPC)
BD	B. Deakins (per RFM)
BG	B. Goodey
BJG	B. J. Grabasky
BJW	B. J. Warne
BL	B. Lock (per BG)
BLS	B. L. Statham
BPH	B. Henwood
BRS	B. R. Spence
BS	B. Skinner
CG	C. Gibson (per BG)
CH	C. Hart
CRP	C. R. Pratt
DBW	D. B. Wooldridge (per SAKJ)
DGD	D. G. Down (per BG)
DGG	D. G. Green
DH	D. Hipperson
DJW	D. Wedd
DPB	D. P. Boyle (per BRS)
DW	D. Walker (per SPC)
GAC	G. A. Collins
GDC	G. D. Craine
GG	G. Gavaghan (per SMP)
GM	G. Martin
GRE	G. R. Else
HM	H. Mendel
ICR	I. C. Rose (per BG)
IH	I. Hunter (per CRP)
JBF	J. B. Fisher (per BG)
JC	J. Clifton
JEC	J. Chainey
JF	J. Firmin (per BG)
JGG	J. G. Green
JH	J. Hale (per RFM)
JHC	J. H. Clarke
JM	J. Muggleton
JO	J. Owen
JP	J. Porter
JS	J. Steeden (per SMP)
JTR	J. T. Radford (per CRP)
JWP	J. W. Phillips
JY	J. Young
KR	K. Redshaw (per SPC)
MB	M. Broomfield
MC	M. Cade
ME	M. Edmonds (per RFM)
MM	M. Meehan (per RFM)
MSP	M. S. Parsons
MT	M. Tunmore
NB	N. Bowman (per DH)
PAD	P. A. Davey
PBe	P. Bergdahl (per BG)
PBu	P. Butter
PC	P. Cleary-Pugh (per SMP)
PF	P. Franghiadi (per RFM)
PH	P. Harris (per BG)
PHS	P. H. Sterling
PJ	P. Jones
PRW	P. R. Williams
PS	P. Smith (per BG)
PT	P. Troake (per CRP)
PW	P. Wilson (per CRP)
PWa	P. Waring
RAS	R. A. Softly
RDP	R. D. Penhallurick
RE	R. Eden
REL	R. E. Lane
RFM	R. F. McCormick

RFM	R. F. McCormick	SH	S. Hind
RG	R. Gaunt	SMP	S. M. Palmer
RJH	R. J. Heckford	SN	S. Nash
RL	R. Leverton	SP	S. Patton
RMC	R. M. Craske (per CRP)	SPC	S. Clancy
RRC	R. R. Cook	TB	T. Bagworth
RWB	R. W. Bogue	THF	T. H. Freed
SAKJ	S. A. Knill-Jones	TNDP	T. N. D. Peet
SB	S. Busuttil	TR	T. Rouse
SC	S. Curson (per CRP)	TW	T. Wilson (per CRP)

Corrections and addenda to 1997 account

The following corrections are made to the 1997 report, presented in Skinner & Parsons (2000).

***Loxostege sticticalis* (L.)**
ZETLAND (Shetland Islands) [**112**] date of specimen at Burrafirth should be 15.8 (per M. Pennington).

***Macroglossum stellaturum* (L.) Humming-bird Hawk**
ADD: ZETLAND [**112**] Fair Isle, 10.7 (per M. Pennington).

***Syngrapha interrogationis* (L.) Scarce Silver Y**
ZETLAND [**112**] date of both Shetland specimens should be 14.8 (per M. Pennington).

Corrections and addenda to 1998 account

The following corrections are made to the 1998 report, presented in Skinner & Collins (2000).

***Tebenna micalis* (Mann) [I/R(t)]**
ADD: DORSET [**9**] Charmouth, 3.9 (12 larvae) (MSP). W. SUSSEX [**13**] Atherington, 14.10 (3 larvae) (MSP).

***Orthonama obstipata* (Fab.) Gem [I]**
ADD: ZETLAND [**112**] Foula, 21.9 (Pennington & Rogers, 2000).

***Acherontia atropos* (L.) Death's-head Hawk [I]**
ADD: E. GLOUCESTER [**33**] Miserden, 8.7, dead in a bee hive (B. Summers per RG).

***Xanthia gilvago* ([D. & S.]) Dusky-lemon Sallow [I?/V?]**
ADD: ZETLAND [**112**] Eswick, 6.9 (Pennington & Rogers, 2000).

Acknowledgements

We would like to thank all of the above-mentioned recorders and contributors. It is possible that we have unwittingly failed to acknowledge some contributors, if this is the case we would like to take this opportunity to apologise for this oversight.

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NOCTUA JANTHINA ([DENIS & SCHIFFERMÜLLER, 1775]) (LEP. : NOCTUIDAE): A YELLOW UNDERWING MOTH NEW TO THE BRITISH LIST

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Abstract

Noctua janthina ([D.& S., 1775]) (Lep.: Noctuidae) is formally recorded for the first time from the British Isles. Notes are given on the separation of this species from the superficially similar *Noctua janthe* (Borkhausen).

Introduction

The night of 9 July 2001 did not at first seem a particularly good one for moths in my garden mercury-vapour trap in Southsea, Hampshire, with a moderate south-westerly wind, a minimum temperature of 16°C and a total of a mere 39 species. One of these was a single specimen of what I thought was *Noctua janthe* (Borkhausen). As is my usual habit, I replaced all the egg trays in the trap after making a note of the species present, and then adjourned for breakfast. It then occurred to me that it was, perhaps, a little early in the year for *N. janthe* as it does not usually appear in the trap until the third or fourth week of the month. I therefore decided to have a close look at the moth, which, fortunately, was still in the trap. Having anaesthetised it with ethyl acetate, intending to release it when it recovered, I gently lifted one forewing in order to examine the hindwing and decided that there was a strong possibility of it being *N. janthina* ([Denis & Schiffermüller]). After killing and setting it I was even more convinced, and a week later I took it over to Barry Goater who kindly confirmed that it was indeed *N. janthina*.

This is the first record of this species in the British Isles, but whether it is the first time the moth has appeared here is another question altogether because who examines all the specimens of as common a moth as *N. janthe* which they find in their moth-traps? One supposes that it was probably a migrant, though the only other migrant in the trap that night was a single *Plutella xylostella* (Linnaeus). There had, however, been several migrant species in the trap earlier that week. The other possibility is that it is an overlooked resident species, though that is improbable, as no specimen has been found in existing British collections.

Position within the British checklist

In Bradley (2000) the order of species within the genus *Noctua* agrees with that in Karsholt & Razowski (1996), so, it would seem sensible that, on the British list, *N. janthina* be placed before *N. janthe*, as in the European list, and given the Log Book number 2110a.

Differences between *N. janthina* and *N. janthe* (Plate A)

In 1991 von Mentzer, Moberg & Fibiger published an account of their researches into a complex of three species previously known under the umbrella name of *Noctua janthina* ([Denis & Schiffermüller]), the other two being *N. janthe* (Borkhausen) and *N. tertia* which they described as a new species and is found only in south-eastern Europe from Italy eastwards to Turkey. According to them the differences between the species are as follows:

Forewing upperside. In *N. janthina* dark brown or greyish brown, tinged purplish, sometimes salmon-red in south-eastern European specimens, and never the ochreous coloration found in some forms of *N. janthe*; orbicular and reniform stigmata finely outlined whitish in *N. janthina*, less definitively so and sometimes not at all in *N. janthe*.

Forewing underside. In *N. janthina* the black area extends to, or a little beyond, the subterminal line, with its outer margin smoothly curved. In *N. janthe* the outer margin of the black area is extended into a series of short digitate projections between the veins.

Hindwing upperside. The black border to the wing is broader in *N. janthina* than in *N. janthe* and extends along the costa to merge, or almost so, with the suffused blackish basal area; whereas in *N. janthe* it terminates about half way along the costa leaving an area of yellow along the costa between it and the basal blackish suffusion. Apical cilia blackish brown in the male of *N. janthina*, remaining cilia yellow; in *N. janthe* the cilia are yellow throughout.

Genitalia. Differences are discussed and illustrated by von Mentzer, Moberg & Fibiger (*op. cit.*). In the males they can only be seen in the everted vesica, and in the females in the bursa copulatrix.

In Barry Goater's experience the main feature in identifying *N. janthina* is the heavily black-bordered upperside of the hindwing. So obvious is this that, when the species approaches a light source, it appears to have black hindwings each with a large central yellow spot, whereas *N. janthe* has yellow hindwings each with a black border. In addition, the identity can be confirmed with confidence by examining the tip of the forewing underside where the contrast between the black area and the apical zone is much greater in *N. janthe*, and the digitate extensions pronounced. There is no need to examine the genitalia.

Biology. The larvae of both species are polyphagous on herbaceous shrubs and low plants; minor differences between the two species are mentioned by von Mentzer, Moberg & Fibiger (*op. cit.*) and Fibiger (1993). Adults fly from July to September, whether *N. janthina* appears a little earlier in the year than *N. janthe* remains to be established.

Distribution. *N. janthina* has been recorded from all European countries except Norway, Estonia and Malta (Nowacki & Fibiger, 1996), and its range extends eastwards to Iran (Fibiger, *op. cit.*).

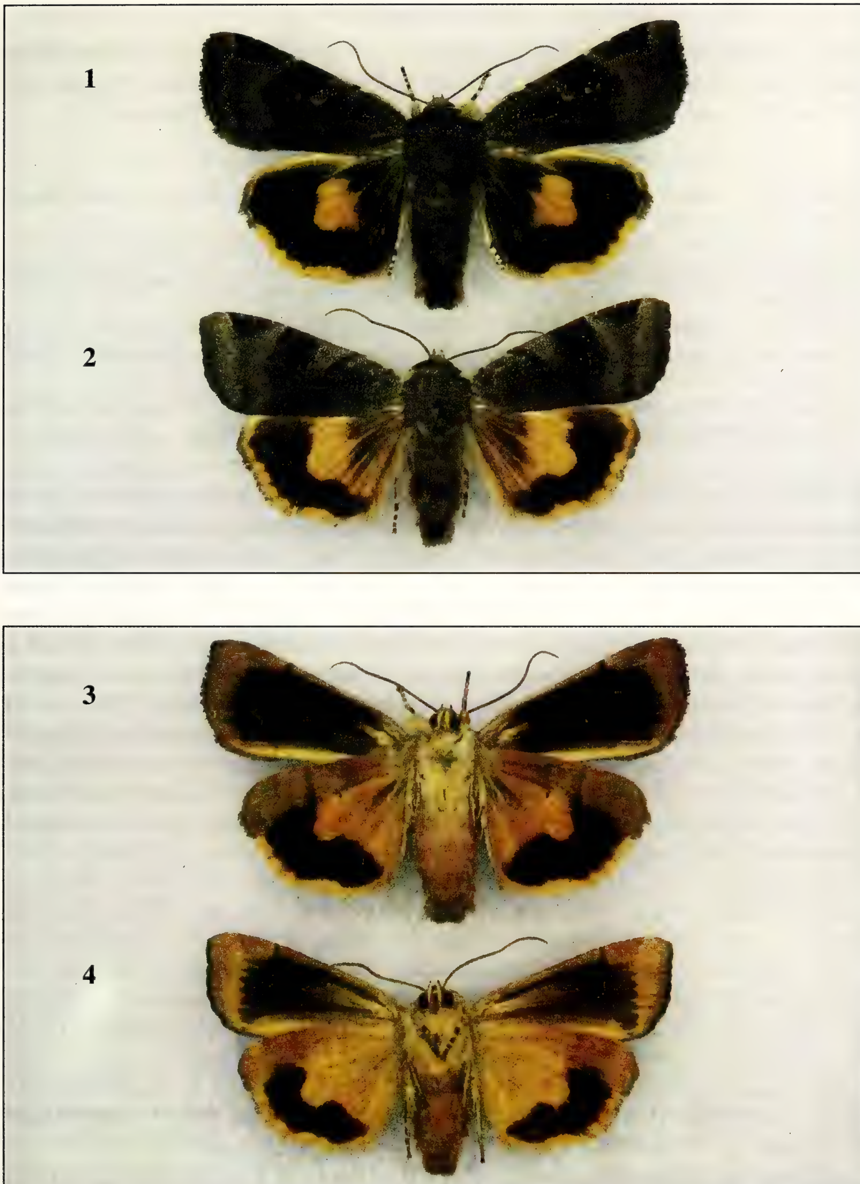

Plate A. 1. *Noctua janthina* ([D.& S.]) Southsea, Hants. 9.vii.2001. Upperside.
2. *Noctua janthe* (Borkh.) Warnford, Hants. 1.viii.1973. Upperside.
3. *N. janthina* Underside.
4. *N. janthe* Underside.

Acknowledgements

I am grateful to Barry Goater for confirming my provisional identification of the moth and for much helpful advice in the preparation of this short paper. Grateful thanks are also due to David Agassiz for photographing the two specimens illustrated.

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EDITOR'S COMMENT: It has been pointed out by one of the referees of John Langmaid's paper that, at present, *Noctua janthina* is the only British macro-moth that lacks an English name! John is reluctant, perhaps wisely, to be the person responsible for such an application and has left the matter to me as Editor! Whilst I view colloquial names with a certain measure of disdain, I concede that since the rest have one, then so must this. However, having tried, but failed miserably to come up with a name that is even longer than that applied to *Noctua janthe* (The Lesser Slightly Broader-bordered than the Lesser Broad-bordered Yellow Underwing?), three more sensible appellations spring to mind, namely *The Violet Yellow Underwing* (from the Latin name), the *Southern Yellow Underwing* (from its perceived ecology) and *Langmaid's Yellow Underwing* (after its captor). I am inclined to suggest we follow the best traditions of British amateur entomology and call it after its original discoverer here – Langmaid's Yellow Underwing.

Dascillus cervinus (L.) (Col.: Dascillidae) in the Isle of Man and the Burren, Co. Clare

Just in case this local but widespread beetle is unrecorded from either of the districts mentioned – both somewhat outlying areas – it may be perhaps worth noting that my old friend Michael Chalmers-Hunt many years ago passed me an example from each that he had taken. The data are: Glen Helen, Isle of Man, 10.vii.1967 and The Burren, 24.v.1974.– A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

NOTES ON THE DISTRIBUTION OF THE WHITE SPOT *HADENA ALBIMACULA* (BORK.) (LEP.: NOCTUIDAE) IN GREAT BRITAIN

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Abstract

This paper reviews the historical distribution of the White Spot *Hadena albimacula* in Great Britain and reports on the results of survey work undertaken between 1999 and 2001. Records gathered indicate that this species currently breeds on at least six sites, in Dorset, Hampshire and Kent. Further survey may locate additional populations. Aspects of this species' conservation are discussed.

Introduction

The White Spot *Hadena albimacula* is covered by a UK Biodiversity Action Plan Species Statement (UK Biodiversity Group, 1999) and is graded RDB 2 (Vulnerable) by Waring (1994), revising the status of RDB 3 (Rare) given in Shirt (1987). The moth is given by Skinner (1998) as "inhabiting shingle beaches and chalk or limestone cliffs" and is associated with Nottingham catchfly *Silene nutans*, which is itself treated as Scarce in Stewart, Pearman & Preston (1994) (see Figure 1). The moth is considered to be very local along the southern coastline of England with Kent, Hampshire, Dorset and South Devon, along with a single example on the Isle of Wight (in 1993) (Skinner, 1998). Bretherton, Goater & Lorimer (1979) add Cornwall and include several inland dots on the distribution map. A dot that appears to be on the Isle of Wight may refer to mainland South Hampshire. They identify Dungeness, Kent, as the "principal" site for the species.

Skinner (*loc. cit.*) gives the moth as flying in June and July. However, the moth has been regularly reported flying in May (D. Walker and S.P. Clancy, pers. comm.) on Dungeness, indeed the maximum number recorded on any night in 1990, 1992, 1998 and 1999 at the Dungeness Bird Observatory were recorded in late May. A partial second generation or delayed emergence was reported in August 1988 (Parsons, 1990) and D. Walker (pers. comm.) reports August records for most years during the 1990s, also from Dungeness. Chalmers-Hunt (1960-1981) gives a record for 1 September (in 1933) whereas in 1996 it was recorded on Dungeness as late as 15 September (D. Walker, pers. comm.). A brief summary of the recent occurrences of this species on Dungeness is given in Walker (1998). The adult comes to light, to the flowers of wood sage *Teucrium scorodonia*, viper's bugloss *Echium vulgare* and campion *Silene* spp. and can be found by day at rest on fence-posts and the walls of wooden sheds (Bretherton *et al*, *loc. cit.*). Skinner (*loc. cit.*) also notes that it can be found visiting the flowers of red valerian. The larva feeds from July to August. Bretherton *et al* (*loc. cit.*) add that the larva is largely nocturnal, except when small. Young larvae can be found on the seedheads by day and, on shingle beaches, larger larvae can be found at the base of the plant (pers. obs.).

Plate B. The White Spot *Hadena albimacula* (Borkhausen).

Photo David Green

Plate C. The larva of the White Spot *Hadena albimacula*.

Photo Phil Sterling

Plate D. Typical habitat of the White Spot *Hadena albimacula* at Dungeness, Kent.
Photo Mark Parsons

Plate E. Typical habitat of the White Spot *Hadena albimacula* on the Dorset coast.
Photo Mark Parsons

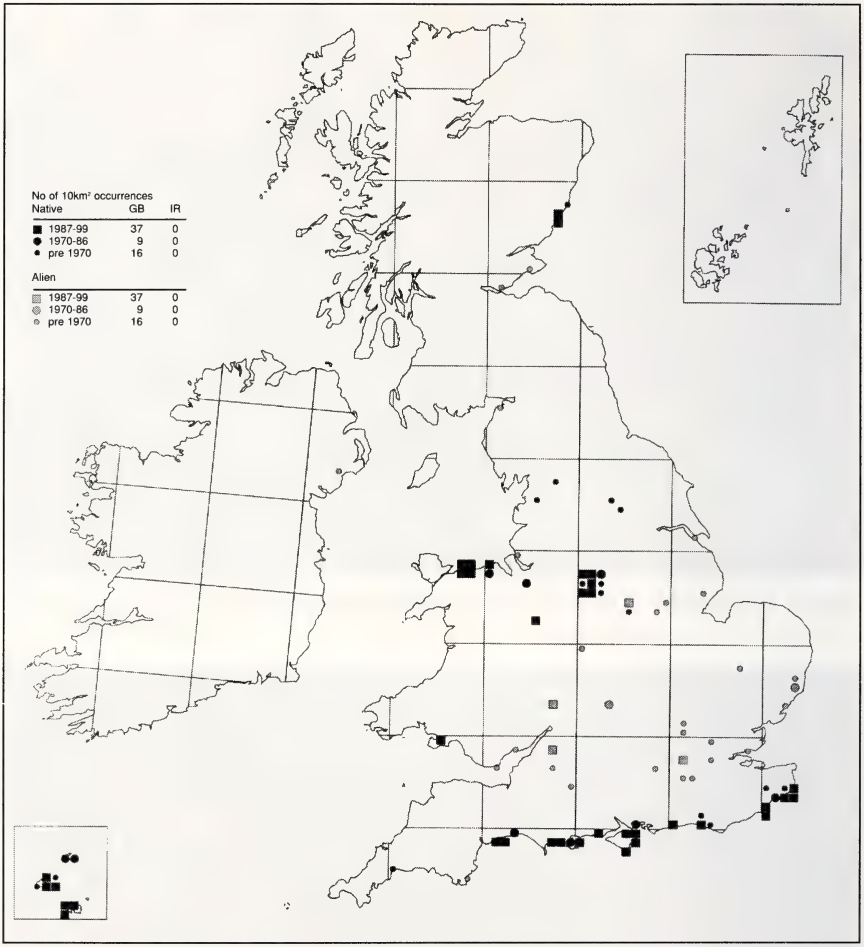

Figure 1: Distribution of Nottingham Catchfly *Silene nutans.*

Recorded distribution to 1998

Cornwall: This county is given in Bretherton *et al* (*loc. cit.*), however, Smith (1997) does not include the species in the county list.

Devon: Noted in South (1961) as being found at Seaton since 1889. McCormick (2001) also gives a Seaton record for 1936. McCormick (*loc. cit.*) adds an old, but undated, record for Branscombe and a record of a singleton in 1962 from the undercliff, as well as Rousdon, Allhallows, in 1960 (ten at light). Further to this Ilfracombe and Braunton are listed, but considered doubtful. Since 1970 the moth has been seen at Colyton (a single adult in 1971); Branscombe to Salcombe Mouth (larvae

in 1976); Branscombe (1985 – several); and Beer and Beer Head undercliff (1997 – 2) (McCormick, *loc cit.*).

Dorset: A single example was recorded from the Dorset coast in 1947 (this could be inferred to be near Lulworth) (Carr, 1948). Also from Arne (2 in 1976); Church Ope Cove in 1986; Bere Regis in 1995; White Nothe (4 larvae in 1996) and West Bexington in 1997 (P. Davey, pers.comm.). Further to this there is a record of a single adult being recorded at Durlston Head in 1992 (National Scarce Moth Recording Scheme).

Hampshire: Goater (1974), reports that a specimen was found at Gosport in 1865 and that the moth was rediscovered in South Hampshire in 1964, larvae being found in 1967. No precise locality is given. Goater (1992) reported records in 1975, 1978 and 1979 and suggested that there was no reason to doubt that the species still occurred in its single known Hampshire site. These records probably all refer to Browndown, where it was also recorded in 1985 and 1997 (B. Goater, pers. comm.). This indicates that there has been a long established colony in this part of Hampshire.

Isle of Wight: In 1993 a single example was seen at Chale Green on the Isle of White (Knill-Jones, 1994).

Sussex: Pratt (1999) reports that the White Spot has been extinct as a breeding species in East Sussex since about the late 1950s and that it was probably only ever resident east of Camber (probably referring to the Sussex section of Dungeness). Pratt (*loc. cit.*) listed four other records: Burgess Hill (1938); Hastings (1956) and Rye Harbour (2 in 1997), and suggested that the remaining reports from Sussex required confirmation.

Kent: It is perhaps Dungeness, Kent, where this species is best known and most regularly recorded. Table 1 gives the records from the Dungeness Bird Observatory from 1990 to 2000, courtesy of D. Walker. These records show a wide fluctuation in the annual totals. Much of this variability is likely to be a reflection of the number of times a trap was operated at the site during the flight period and the prevailing weather conditions. Elsewhere in Kent, it has been recorded at Birch Wood (nineteenth century); Shorne Ridgeway (a single example in 1958); Folkestone, including Folkestone Warren (19th century to 1976); Shakespeare Cliff (to 1900); St. Margaret's Bay (1920s); Dover and Dover Cliffs (pre 1914, 1932, 1951 and a single example in 1980); and Willesborough (a single example in 1955) (Chalmers-Hunt, 1960-1981). Ferguson (pers. comm.) adds a record for Dover from 1985 and two records from South Foreland (1998) and a singleton was recorded in 1987 at Dymchurch (J. Owen, per S. P. Clancy). The National Scarce Moth Recording Scheme, coordinated by Butterfly Conservation, has a more recent record from Folkestone Warren (a singleton in 1992) and also records from Greatstone Dunes (1987); Lydd (1984); St. Margaret's Bay (1989); and near Peene (1986, a single adult). It has been recorded every year since 1995 at Samphire Hoe and can be the commonest moth

when it is flying with over 100 being seen per night. Samphire Hoe was seeded with the foodplant, but the amount of Nottingham Catchfly is now diminishing as the site becomes more vegetated, although the plant is still frequent on the cliffs behind the Hoe (T. Rouse, pers. comm.). The moth was again recorded at Peene in 1994 (I. Ferguson, pers. comm.), as well as from Densole – a single adult in 1997 (T. Rouse, pers. comm.) and Kingsgate (1998) (I. Ferguson, pers. comm.), Greatstone (every year from 1990-1998); Lydd (1991 & 1992); New Romney (1992, 1995, 1997 and 1998); and Littlestone (1995 & 1997) (Redshaw, 2001), though many, if not all, of these are likely to be the result of wandering individuals.

Year	Total number of individuals	First date recorded	Last date recorded	Maximum number of individuals recorded	Date maximum number of individuals recorded
1990	178	13.5	15.7	31	30.5
1991	242	3.6	6.8	38	17.6
1992	868	21.5	8.7	139	31.5
1993	519	11.5	10.8	63	6.6
1994	386	31.5	29.8	43	15.6
1995	509	20.5	20.7	65	6.6
1996	346	20.5	15.9	53	17.6
1997	1041	14.5	14.8	143	12.6
1998	962	13.5	14.8	145	25.5
1999	370	20.5	3.8	31	26.5
2000	534	13.5	13.8	65	2.6

Table 1: Records of the White Spot *Hadena albimacula* from the Dungeness Bird Observatory, 1990-2000.

Other counties: There is a single record from Croydon, Surrey, in 1983 (Collins, 1997). Arnold, Baker, Manning & Woiwod (1997) note that the species was recorded from Bedfordshire in error. Fowles (1988) lists the White Spot as doubtful for Ceredigion, suggesting that the most likely source for the specimen in the Salter collection in The National Museum of Wales was from L. W. Newman outside the county.

There are questionable records on the National Scarce Moth Recording Scheme database from Cornwall, Devon, Dorset, Hampshire, Surrey, Kent, Pembrokeshire, a single record from either Pembrokeshire or Cardiganshire, a single record from either West Lancashire or Westmorland and a single record from East Perth. It has not been possible to verify these records and many of them, if not all, must be considered doubtful.

In summary, towards the end of the 1990s, the species was well known from the Dungeness area, Kent, and was probably also resident in the Folkestone and Dover

areas. The White Spot was probably resident on at least one site in Dorset, and probably resident at a single site in each of Devon and Hampshire. The species was considered extinct in Sussex and its status on the Isle of Wight uncertain. It is also clear from the records that the adult can wander from known breeding sites.

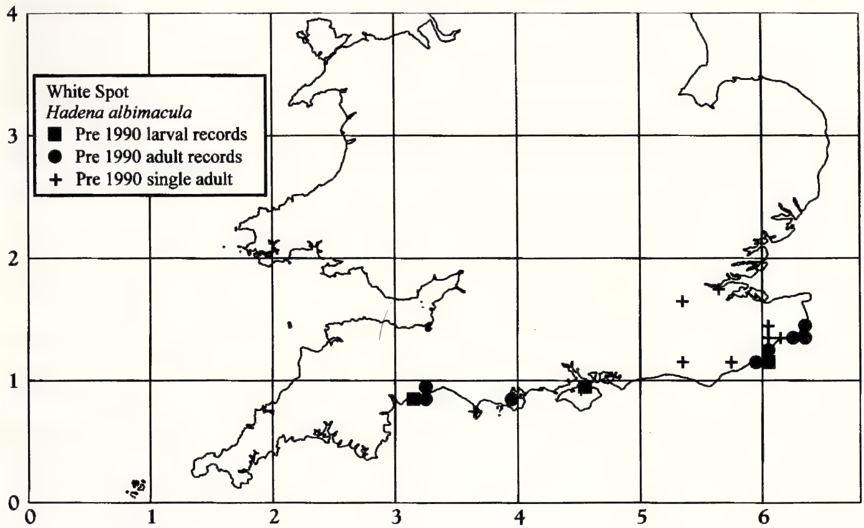

Figure 2. Distribution of the White Spot *Hadena albimacula* to 1989.

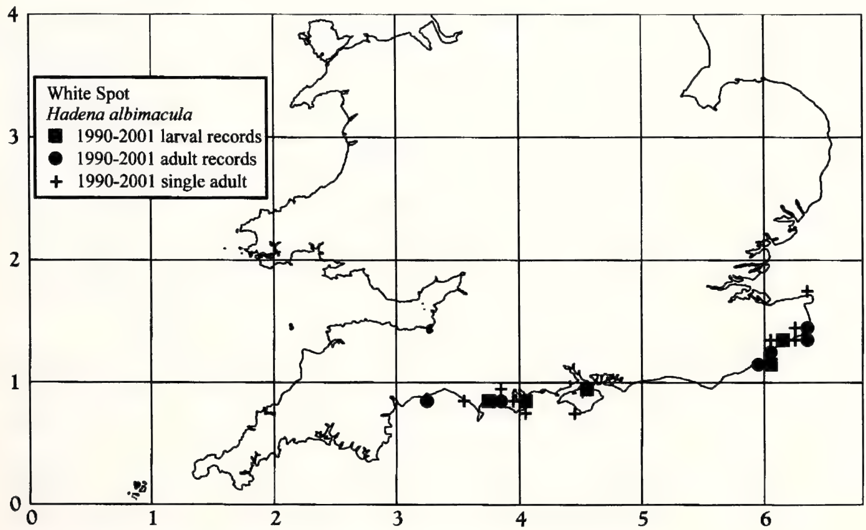

Figure 3. Distribution of the White Spot *Hadena albimacula*, 1990-2001.

Distribution 1999-2001

During the summers of 1999, 2000 and 2001, Butterfly Conservation has been encouraging a survey for this species as part of "The Action for Threatened Moths Project". Records gathered so far indicate that the species currently breeds on at least six sites, these being in Dorset (White Nothe and Ballard Down/Studland Cliffs); Hampshire (Browndown); Kent (Dungeness, Hythe Ranges and Samphire Hoe). Further to this, the species is still likely to be present at the Devon site (near Beer), and may be resident elsewhere on the cliffs of Dorset. This apparent increase is, however, unlikely to represent a change in the species' fortunes, but is more likely the result of targeted recording effort. A number of searches (including two surveys by the National Trust) have been undertaken at other sites in the last three seasons without success, these include sites in Kent, Sussex, Isle of Wight and Dorset. Again, it is possible that the species was overlooked in at least some of these areas, and a few other southern England sites where the foodplant occurs, and that further searches may prove positive.

County/Site	Year	Stage	Source
Dorset			
East Lulworth	1999	Adults (2)	M. Parsons/D. Green
Stonehill Down	1999	Adult (1)	P. H. Sterling/D. Hallett
Studland Cliffs	1999	Adults and larvae	P. H. Sterling/ D. Pearman
White Nothe	1999	Larva	M. Parsons/D. Green
Preston	2000	Adult	P. Knight
Ballard Down	2000	Adults	C. Manley
Hampshire			
Browndown	2000	Adults and a larva	S. Swift/D. Green
Kent			
Dungeness	1999, 2000, 2001	Adults (and larvae in 2000)	D. Walker & Redshaw (2000)
Hythe Ranges	1999	Adult and larvae	S. P. Clancy
Greatstone	1999, 2000	Adults	Redshaw (2000)
New Romney	1999	Adult(s)	Redshaw (2000)
Dymchurch	2000	Adult	J. Owen per S. P. Clancy
Samphire Hoe	1999, 2000, 2001	Adults	T. Rouse

Table 2. Records of White Spot *Hadena albimacula* 1999-2001

Conservation

It has been suggested that this species occurs at relatively few sites on the Continent and is thought to be declining in at least parts of Europe (Parsons, 2001). Fortunately, no significant conservation concerns have been noted during the present survey

in England. However, the plant is a species of early successional stages and on some sites even short periods with reduced disturbance could be devastating to the survival of the moth. Site managers should aim to provide suitable conditions to maintain healthy populations of flowering and seeding Nottingham Catchfly on a year-by-year basis. On the majority of sites these conditions should arise from natural events such as wind erosion, small cliff falls etc. A decline in the abundance of the plant has been noted where it was seeded at Samphire Hoe and, perhaps, some localised disturbance of the habitat may be needed here to provide continued suitable conditions for the plant.

Further survey is still required to ascertain the true distribution of the species in England. Continued monitoring of these populations is desirable to provide early warning of any change in status.

Acknowledgements

I would like to take this opportunity to thank those that have contributed records to The National Scarce Moth Recording Scheme, which were used for the basis of this article. In particular I would like to thank Roy McCormick, Peter Davey, Barry Goater, Colin Pratt, Sean Clancy, David Walker, Ian Ferguson and Tony Rouse for supplying and verifying records. I also thank Roy McCormick for allowing a preview of the relevant section of his book, David Walker for suggesting the *Atropos* reference, Peter Davey for the *Entomologist* reference and David Green for producing the distribution maps of the White Spot. The Joint Nature Conservation Committee have and continue to support the National Scarce Moth Recording Scheme run by Butterfly Conservation, which was previously co-ordinated by Dr Paul Waring. I am grateful to Deborah Procter (Joint Nature Conservation Committee) and Alex Lockton for assistance with locating a source for the Nottingham Catchfly map and for information on its national status. I am particularly grateful to Henry Arnold and Chris Preston (CEH, Monks Wood) for supplying the map, which is based on data collected for the *New Atlas of the British and Irish Flora* to be published by Oxford University Press in 2002, and reproduced by permission of Botanical Society of the British Isles (BSBI), Centre for Ecology and Hydrology (CEH) and Department for Environment, Food and Rural Affairs (DEFRA). I am also grateful to Dr Martin Warren and Dr Ian McLean for comments on early drafts of this paper. The Action for Threatened Moths Project is funded by English Nature and Butterfly Conservation. The moth distribution maps were plotted using the DMAP program for distribution and coincidence map plotting, written by Dr A. J. Morton.

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Hazards of butterfly collecting. Hunting for *Allancastria* – Lebanon, 1972

It was a wonderful spring morning at about 1,300 metres in the Lebanese Mountains. Crispness was in the air and the Lebanon Mountains were in the background, still tipped with white snow. Everything was green, flowers abounded. Yellow Chrysanthemum, white Clematis, huge red or violet Anemones, many Lilies, and with luck Tulips. It really is a shame that relatively few people visit the Mediterranean in spring, but I guess the beaches and water temperatures are more important to most visitors, and here the water is still cold in April.

We were going to Feitroun to look for *Allancastria cerisy* Godart, 1824, a beautiful "Festoon Swallowtail" then believed to be found from Greece to Iran and the Caucasus. Feitroun was a lovely spot with emerald green meadows, interspersed with narrow serrated limestone rocks up to ten metres tall. It teemed with butterflies and was sufficiently screened for my wife to do "serious" sunbathing. The occasional herdsman would be heralded well in advance by his flock.

The reason that the expedition was dedicated to *Allancastria* was the recent description of *A. cerisy eisneri* Bernardi, 1970. This differs from typical *A. cerisy* especially in lacking the blue submarginal spots on the hindwings upperside. Bernardi, intriguingly, suggested that two species might even be involved. Now, we had found the form with blue spots in Beirut suburbs as early as late February earlier that year, while we found the other form at about 1,400 metres first in April. Feitroun seemed a very possible place for checking whether both forms were sympatric.

A. cerisy was very common, dancing around the limestone cliffs, and pretty soon I had a good series. All were of the form without blue spots. But some time later I came across some less open thickets with climbing *Aristolochia* and here I caught a small series of the form with blue spots. The other one bred on low *Aristolochia* in more open country.

I went to tell my wife the promising news and to have a cold beer. She showed me a large jumping spider perched on her big toe and told me that it had been jumping all over her. Just while we were both looking at it, a blue Lycaenid flew over the toe. The spider jumped almost straight up and caught the butterfly in flight. It was one of the most thrilling moments in my life and I took it as a good omen. It would have been wonderful to film it.

A couple of hours of additional work yielded just a few more of the blue spotted form, so we set off for Beirut to examine the booty. Step number one was to put one abdomen of both forms in KOH ready for genitalia dissection the next day. The material was divided into two groups, based on the absence or presence of blue spots. The ones with blue spots were on average larger and a number of other subtle differences were found, including the colour of the legs. There was absolutely no tendency to transitional forms. Finally, the blue-spotted form was generally worn, the other freshly hatched. This was beginning to look very promising indeed.

The next day, after work, I started looking at the genitalia. Often Papilionid genitalia are not all that easy to view and differences between species are often subtle, and my microscope was not exactly an upper range one. But pretty soon it was clear that the two sets of genitalia were so different that they could not possibly

be from the same species. I had found a new Swallowtail, though I would not get to name it, since there were available names aplenty – but I still remember the pleasant tingling in my spine – and the great pleasure that this was the result of a specially organized trip. We later found that *A. cerisy* is essentially a coastal species and that the other one, *A. deyrollei* Oberthür, 1859 only occurs above 1,100 metres. I wrote one of my first serious papers on this issue (Larsen, 1973. *Entomologist*, 106:145-152), after suggesting that *A. caucasica* Lederer, 1864 and *A. louristana* le Cerf, 1908 in Iran might also be distinct species, and they are indeed so considered today.

I had never realized what happened when you wrote a scientific paper of this kind. Letters poured in and some correspondents have become good friends. But the most unexpected event was the arrival of a letter From Ted Wiltshire. Together with R. E. Ellison he had done a Lebanon butterfly/moth survey in the 1940s, then gone on to do the basis of Egyptian butterflies, and then a splendid book on Iraq butterflies. Back in 1973 I had supposed he was long since dead, so his letter came as a complete – but very welcome – surprise. Ted is not very dead – I last met him at the RESL in London in 1999 and we went to have a pint at a pub close by. He is now into his 90s. He has described more than 25 new moths that I caught in Arabia among his prodigious work on the Macroheterocera.

Since 1992 I have had to examine a lot of butterflies and make a lot of genitalia preparations. I have since described nearly a hundred new species and subspecies. But nothing will surpass the tingling in my spine like on that April day in 1992!– TORBEN B. LARSEN, Bangladesh, World Bank, 1818 H. Street N.W., Washhington D.C., 20433, USA.

Early Willow Beauties *Peribatodes rhomboidaria* (D.& S.) and vanished Magpie Moths *Abraxas grossulariata* (L.) (Lep.: Geometridae)

C. M. Everett (*Ent. Rec.* **113**: 202) refers to my "puzzling" over the voltinism of *Peribatodes rhomboidaria* (*Ent. Rec.* **112**: 10). I would rather say I was acting on a generally valid assumption that when one's experience seems at variance in some respects with what the standard sources indicate, the fact is generally worth noting in print. I drew attention to another but more striking case relating to the Magpie Moth *Abraxas grossulariata* in 1989 (*Ent. Rec.* **101**: 238). Since my latest sighting of it from here, which remains as recorded there (an extraordinary early example, 24.v.1989), the species seems to have died out in this district for no obvious reason. Could there, I wonder, be any connection between very advanced emergences and imminent local extinction. If so, the reason is far from obvious.– A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

An early, or late, example of the Common Quaker *Orthosia cerasi* (Fabr.) (Lep.: Noctuidae)

With the weather being cloudy, and very mild, on 30 November 2001, I ran my Robinson-pattern trap in the garden. On examining the catch the next morning, I was most surprised to find a perfect specimen of the Common Quaker.

Skinner (1998. *The colour identification guide to Moths of the British Isles*. Second edition: Viking), states that the flight period is March and April; on checking my past garden records I see that I have recorded it here from early February to the middle of May. Other species recorded that nights were December Moth *Poecilocampa populi* (L.), Grey Pine Carpet *Thera obeliscata* (Hb.), Wormwood Pug *Eupithecia absinthiata* (Clerck), Double-striped Pug *Gymnoscelis rufifasciata* (Haw.), Chestnut *Conistra vaccinii* (L.), Brick *Agrochola circellaris* (Hufn.) and Silver Y *Autographa gamma* (L.).– TONY STEELE, 57 Westfield Road, Barnehurst, Kent DA7 6LR.

The November Pug? A record of *Eupithecia assimilata* Doubleday (Lep.: Geometridae) in November

In line with the general theme of "out of date" moths, I can report that Andrew Wood recently reported to me that he had captured a male Currant Pug *Eupithecia assimilata* in his garden light trap at Bengeo Street, Hertford on the night of 2 November 2001. He most kindly sent me the living specimen for verification; it was a male.– COLIN W. PLANT, 14 West Road, Bishops Stortford, Hertfordshire CM23 3QP (E-mail: colinwplant@ntlworld.com).

Unusually-timed occurrences of two *Orthosia* species (Lep.: Noctuidae) from Essex

A record, backed by a specimen, of the Common Quaker *Orthosia cerasi* (Fabr.) dated 16 October 2001 was recently passed on to me from a trap run by Jean and Tim Green at Theydon Bois, South Essex. Following this, and after she had carefully checked the specimen, Anne Lansdown reported a Hebrew Character *Orthosia gothica* (L.) on 23 October 2001 at Lawford, North Essex.

Both sites, and others further away, encountered some possible migrant activity on the night but all these, such as Dark Sword-grass *Agrotis ipsilon* (Hufn.) and Silver Y *Autographa gamma* (L.) could easily have bred in Britain, so evidence for migration is at best slim. Steve Nash (pers. comm.) recorded a Small Quaker *Orthosia cruda* (D.&S.) at Fernham, Berkshire, on 17 October 1988 together with five Vestals, *Rhodometra sacraria* (L.), a Convolvulus Hawk-moth *Agrius convolvuli* (L.) and a Small Mottled Willow *Spodoptera exigua* (Hb.). I am not aware that Continental *Orthosia* are double-brooded, or that they fly markedly earlier that their British counterparts. Martin Corley (via S. Nash, pers. comm.) states that in his experience most Portuguese *Orthosia* species fly in March and April, though some of these are from mountain areas. It seems more probable that the Essex moths at least were produced locally. Interestingly, numbers of the pyralids *Hypsopygia costalis* (Fabr.) and *Orthopygia glaucinalis* (L.) were seen at this time, suggesting a second brood.

Because of mild weather it seems unlikely the pair could have been fooled into thinking a winter had passed, so it is possible that either some other environmental stress condition affected their emergence, or that isolated specimens occasionally simply "screw up", perhaps because of a genetic fault.

Other early dates for *O. cerasi* are 13 December 1998, Isle of Wight (B. Warne); 5 December 2000, Devon (R. Bogue *Ent. Rec.* **113:** 17); 3 December 2000, West Yorkshire (P. Talbot *Ent. Rec.* **113:** 17-18); and 25 November 1999, Suffolk (N. Sherman, given in Talbot, *Ent. Rec.* **113:** 17-18). Other exceptionally early dates for Spring species are summarised in Plant, C. W. *Ent. Rec.* **113:** 63-64.– BRIAN GOODEY, 298 Ipswich Road, Colchester, Essex CO4 4ET. (E-mail: brian.goodey@dial.pipex.com)

Notes from the bug room – 1

Beware of gifts from friends – you never know where they may lead! In July 2000, my friend Boyd Barr of Balinluig, Perthshire reared a few *Arctia caja* L. from wild larvae collected around the village. Purely for amusement he used a fresh female to assemble the local males. He was pleasantly surprised to attract one male which stood out from the crowd by having dusky orange hindwings (?ab *brunnescens* Stattermayer). He allowed this fortunate male to pair with his typical female and the resultant larvae he sent to me with the suggestion that I "rear a few to see if any abs appear".

Kept in my hot sunroom, about half of the larvae grew rapidly and produced a generation of adult moths in September. Some of these had a slight – very slight – hint of dark shading on the hindwings! These I allowed to pair. Out of idle curiosity I subjected some of these F1 pupae to high and low temperatures in the first 24 hours of their existence. As you might have guessed the pupae in the incubator (37°C for three days) produced moths with a paler orange hindwing, reduced hindwing spotting and increased areas of white on the forewing. Pupae exposed to 0°C for three days produced moths with scarlet orange hindwings, larger hindwing spots and increased areas of brown on the forewings. Surprisingly, this latter group were more-or-less indistinguishable from the control group hatched at room temperature. The changes in colour and pattern were not extreme and the hint of hindwing shading appeared in all three groups.

An F2 generation of 83 adults emerged in November. Of these 64 were of typical appearance and 19 had dusky hindwings. A surprise was the appearance of ab. *consolidata* Cockayne in which the triple forewing costal brown blotch is "filled in" to produce a single blotch. Specimens with both atypical characters were chosen to produce the next generation.

So far, so good. When I announced my intention to continue breeding *caja* through the winter, Boyd asked how I intended to feed them? "Not a problem, mate," I replied "We hardly ever have frost down here and it never snows". How those rash words would return to haunt me. Before Christmas the hard frost had reduced our luxuriant local docks to mush. Even the dandelions disappeared! On 30 December I was out in the snow collecting a bucket of small nettle shoots, which the larvae devoured in

under 12 hours! As the weather ameliorated in January 2001, I ranged far and wide collecting all manner of weeds – usually as overwintering rosettes. Three supermarket bags crammed full of leaves fed the 750 larvae for just two days! The larvae were kept in three large wooden boxes indoors. Each box had constant heat and light provided by a 40-watt bulb. Pupation was most successful in cardboard egg cartons. A succession of cartons was provided as two cocoons in one "hole" usually resulted in only one pupa.

An F3 of 747 adult moths emerged between 16 January and 16 February Of these 63% were typical, 29% had dark hindwings and 8% were ab. *consolidata*. Interestingly, 152 females had dark hindwings whereas only 62 males were so coloured. Once again, only heavily marked specimens were used to produce the F4 which emerged in April 2001. This time 58% were typical, 38% had dark hindwings but only 4% were ab. *consolidata*. At least by now the wild foodplants were back in leaf and the easy rearing of the next generations partly healed the scars gained over Christmas!

The F4 produced two interesting males which lacked the central hind margin brown blotch of the forewing. As both were heavily marked ab *consolidata* their appearance was quite striking. I attempted to pair them with a female which had exceptionally dark hindwings. This attempt failed. The darker female specimens were often reluctant to pair. Some, usually the most extreme, simply died within 24 hours of emergence. I therefore abandoned specific pairings and reverted to the "population" approach where several selected males and females were placed together in the pairing box and allowed to sort it out for themselves. I was thankful for any fertile eggs so produced!

An F5 of 352 adults emerged in June. Specimens with dark hindwings crept into the lead for the first time with 46% over the 39% of typical appearance. The ab. *consolidata* now appeared with typical hindwings (6%) and dark hindwings (9%). Females with cloudy, darkened forewings appeared in this generation but proved very prone to early mortality and a failure to pair. The F5 seemed to fall into two distinct parts. The first part produced the dark specimens. The second part emerged later and revealed bright orange hindwings and forewings with reduced areas of brown. A couple of F5 part two males had very reduced spotting on the hindwings but, needless to say, both failed to pair!

I obtained pairings within both parts of the F5, the adults of which I kept segregated. Unfortunately a family holiday to Spain in July meant leaving the part one larvae in Somerset whilst the part two eggs accompanied me abroad where they duly hatched. This generation of larvae seemed to lack the vigour of their ancestors and many failed to pupate or produced miserably small adults. The F6 again fell into two parts with the earlier specimens being the darkest and the later emergences being more typical in appearance. I must admit that at this stage my enthusiasm for *caja* was waning and I failed to count the adults. Indeed I intended to chuck the lot out into the paddock! Then, on 18 September a specimen with chocolate brown forewings bearing a small white patch and merged hindwing spots appeared and my enthusiasm for *caja* returned! The useless insect died without issue, of course, but the genes must be in

there somewhere! As I write (October) the F7 larvae are demolishing the local docks and dandelions.

The unusual male specimen that appeared in the F6 is very similar to one illustrated by Cockayne (1947. *Proc. Trans. S. Lond. ent. Nat. Hist. Soc.*,1947-48) on plate 6. He did not attach an aberrational name to the specimen and suggested that it was not a "genetic entity". The appearance of another similar specimen in my F6 would seem to contradict his conclusion. Perhaps there are others out there?

Can I draw any conclusions after all my efforts? Cockayne (*op. cit.*) asked whether *brunnescens* was the heterozygous form of the very dark ab. *fumosa* Horhammer. If our original male was indeed *brunnescens* then it is unlikely to have been a simple heterozygote as the inbreeding would have quickly produced a proportion of the unmistakeable *fumosa*. This has not happened as yet. Secondly, despite Cockayne's scathing dismissal, temperature extremes applied to the fresh pupa do affect the colour and pattern of the subsequent adult moth.

Between 1928 and 1933 the late F. W. Sharman of Peterborough bred many specimens of *Arctia caja* ab. *petriburgensis* Cockayne with white forewings and red or yellow hindwings. I have a few of his specimens in my own collection and very beautiful they are. He began with a "rather dark" specimen reared from his garden and averaged four generations a year. I now look at those specimens in the knowledge of how much sheer hard work Sharman put into them. I wonder if my own enthusiasm will prove as durable as his? I salute his ghost!– MIKE BRYAN, Extons, Taunton Road, Bishops Lydeard, Somerset TA4 3LR.

A late scorpionfly

During a Bangor Bird Group field trip to the Lleyn Peninsula on 4 Novermber 2001, BBG member Sion Jones caught a scorpion fly at Porth Meudwy, OS grid reference SH 163255. This proved to be a male *Panorpa germanica*. This extends the recorded flight period by about three weeks, as the provisional atlas (Plant, 1994) said adults of this species occur from mid-May to mid-July, but with a scatter of later records through to mid-October. Surely this must convince George W that global warming is occurring? Colin Plant has confirmed that this is the latest record in the national database.– JOHN BRATTON, 18 New Street, Menai Bridge LL59 5HN.

***Gastrophysa viridula* Degeer (Col.: Chrysomelidae): a further note**

I fully agree with Richard Jones' estimate of this species as being "virtually absent from the south-east" (*Ent. Rec.* **113**: 130), and have never met with it in the London district, Kent or Surrey. In Hertfordshire it was recorded from Tring by Elliman in 1902, and was apparently common on docks at Welwyn Garden City where the late W. O. Steel found it in about 1945, but these were the only records until recently. According to Trevor James, the Coleoptera Recorder for the county, there have been three records since 1970 – at Hunsdon Mead in 1984, Water End, North Mimms in 1990 and Benington in 2000. In each case, there were many individuals in

a relatively small area. In Sussex I have encountered it only once, on 15.vi.1974. That was on Lewes Levels, where I took a specimen by general sweeping – curiously enough just a year before Mr Jones obtained one in the same area – but was unaware that it was the first to have been found in East Sussex.– A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

Oncomera femorata (Fabr.) (Col.: Oedemeridae); a recent find in the London area

Colin Plant's note (*Ent. Rec.* **113**: 230) on this interesting species reminds me that my friend Keith Lewis obtained one from oak *Quercus* sp., in Chalk Wood, near Bexley, north-west Kent a few years ago. My impression is that the beetle is probably almost general over, much of England, but being of rather obscure habits is probably often passed over despite is considerable size. It is indeed remarkable that the early stages and their habitat remain unknown. My sole find of this species was a male beaten out of ivy *Hedera helix* on a tree at Fairlight Glen, East Sussex, on 27 September 1949.– A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

Early mating in the Seven-spot Ladybird _Coccinella septempunctata_ (L.) (Col: Coccinellidae)

On 13 February 2000, at Trumpington, Cambridgeshire (vice-county 29), a pair of Seven-spot Ladybirds *Coccinella septempunctata* was engaged in mating activity on low vegetation at around 10.30 hours. The locality was a thin strip of south-facing grass verge along a fairly quiet road, bordered on the north side by hedgerow and woodland: a classic "sun trap". The morning was sunny, still and moderately warm, as was much of the winter and early spring of 1999-2000. On this occasion only four other individuals of this species were seen at this locality, but numbers visible there grew to 40 on 26 February (when no mating was observed) and more than 250 on 12 March (three mating pairs). The large number of Seven-spot Ladybirds in and around Cambridge during the second week of March 2000 suggests that the main emergence from over-wintering sites in that year occurred then. Majerus' standard work (1994. *Ladybirds*. HarperCollins), surveying the years 1985-1989, gives (p. 63) the earliest date for such pairing as 17 March (in 1989) and the mean for the four-year period 1985-1988 as 21 April, with emergence taking place in the second week of March in 1989, a month in advance of the more usual date. In a paper evidently written later (1992. *Ent. Rec.* **104**: 135-142 and 173-183) the same author reports mating as early as 25 February in 1990.

The behaviour of other species of ladybirds during the late winter and early spring period of 2000 also seems to have been seasonally advanced, but I did not note any further exceptional events. Many pairs of the Pine Ladybird *Exochomus quadripustulatus* (L.) were mating in the Trumpington area on 12 March, the date

which Majerus (1994. *loc. cit.*) gives as the mean for his study period; a pair of Cream-streaked Ladybirds *Harmonia quadripunctata* (Pontoppidan) at Watford, Hertfordshire (vice-county 20), were mating on 30 March (cf. Majerus' earliest date of 26 March in 1989, and mean of 13 April in 1985-1988).– C. M. EVERETT, The Lodge, Kytes Drive, Watford, Hertfordshire WD25 9NZ.

Gymnancyla canella (D.& S.) (Lep.: Pyralidae), new to Devon

Two specimens of *Gymnancyla canella* (D.& S.) were taken at light near the Visitor Centre at Dawlish Warren on 4.viii.2001, by myself, B. P. Henwood and S. Mitchell. This is the first time the species has been seen in Devon. The seaward side of the sand dunes was visited in early September, but the prickly saltwort *Salsola kali*, which is abundant away from the trampled part of the sand up to the eastern end of Dawlish Warren, had died back. One of the specimens was exhibited at the Amateur Entomologists' Society Exhibition on 6.x.2001 and both specimens were shown at the British Entomological and Natural History Society Exhibition on 10.xi.2001. Further work will be carried out in 2002.– Roy MCCORMICK, 36 Paradise Road, Teignmouth, Devon TQ14 8NR.

Notes on breeding two forms of the Riband Wave _Idaea aversata_ (L.) (Lep.: Geometridae) at Freshwater, Isle of Wight

In June 2000 I caught a female banded form at light at Freshwater of *Idaea aversata* (L.) which had an orange ground colour. I managed to breed a series of the banded form with orange ground colour together with the plain form, ab. *remutata,* with typical ground colour and the banded form with typical ground colour. 60% of the bred specimens were of the banded form with orange ground colour and the remaining 40% were divided between the other two forms. There were no examples of an orange ab. *remutata* so it appears that the orange variety only occurs in the banded form.

On 30 June 2001, I took a female *Idaea aversata* (L.) ab. *remutata* at light at Freshwater which had a pale red colour. The resultant progeny emerged in August, fifteen (58%) of which were orange ground coloured ab. *remutata* and eleven (42%) were typical ab. *remutata.* There were no examples of the banded form in the entire brood so it appears that the red form is governed by a dominant gene.

I have taken several other examples of both the orange and red forms in my garden at Freshwater, Isle of Wight and shall continue to breed from these forms when the opportunity arises. Examples of these forms will be exhibited at the Annual Exhibition of the British Entomological & Natural History on 10 November 2001.– S. A. KNILL-JONES, Roundstone, 2 School Green Road, Freshwater, Isle of Wight.

Notes on *Coleophora fuscicornis* Zeller (Lep.: Coleophoridae)

During late May 2001, I was surprised to find *Coleophora fuscicornis* to be common on fields at High Woods Country Park, Colchester, 200 metres from my home. This locality is approximately 10 kilometres from the coast and so represents the first inland record for the species in Britain. The site has a fair mixture of ground flora, which includes the larval foodplant smooth tare *Vicia tetrasperma*. During early August, a brief search revealed numerous cases, or rather the *Vicia* seedpods used by larvae during their search for food. One case was found on the side of a seedpod of meadow vetchling *Lathyrus pratensis* and the larva happily feeding on the seeds therein (though its case was constructed of a *Vicia* seedpod and it is unlikely to be able to survive in areas lacking *Vicia tetrasperma*). To complement the larval description given in *The moths and butterflies of Great Britain and Ireland* **3**: 250, the head is pale to mid brown and the body a pale straw colour, the abdomen widening gradually so as to be broadest at segments 4, 5 and 6.– Brian Goodey, 298 Ipswich Road, Colchester, Essex CO4 4ET (E-mail: brian.goodey@dial.pipex.com).

Limenitis camilla (L.) (Lep.: Nymphalidae) in north-west Kent

On 7 August 2001, I watched, for some time, a White Admiral butterfly *Limenitis camilla* skimming across the front gardens of my road at Dartford, a very short distance from the large woodland of Joyden's Wood. The butterfly was a common resident of the area from about 1947 until the mid-1950s. Asher et al (2001. *The Millennium Atlas of Butterflies in Britain and Ireland*), indicates an absence of records of this species in this ten-kilometre map square (TQ 57) since 1995, and also the adjoining squares to the west, east and north, despite recent territorial expansion of the species.– B. K. West, 36 Briar Road, Dartford, Kent DA5 2HN.

Cypress Carpet *Thera cupressata* Geyer (Lep.: Geometridae), assumed to be breeding in Devon

Further to the single specimen of *Thera cupressata* taken at light at Dawlish, 23.xi.1999 (*Ent.Rec.* **112**: 106; *Rep. Trans. Devon Ass. Advmt. Sci.* **132**: 343; *The Moths of Devon*: 115), a further six were seen at light at the same locality – two on 28.x.2001, two on 11.xi.2001, one on 23.xi.2001 and one on 24.xi.2001. The first four were males, of which two were taken. The last two were females and were released to increase the probable colony. Further work to find larvae and confirm the colony will be carried out in 2002.– Roy McCormick, 36 Paradise Road, Teignmouth, Devon TQ14 8NR.

Early emergence of *Erebia aethiops* (Esper) (Lep.: Nymphalidae) in north-west Scotland

On 7 July 2001, my wife and I joined nineteen other members of the Dingwall Field Club on a botanical outing to the limestone pavements of Inchnadamph in Sutherland. The weather was warm but overcast, with cloud below 2000 feet shrouding the spectacular peaks of Stac Polly, Ben More Assynt, Suilven and Quinaig. Despite the

unpromising conditions there was a small number of Common Blue *Polyommatus icarus* (Rott.) and Small Heath *Coenonympha pamphilus* (L.) flying from the start of the Gleann Dubh track, along with Chimney-sweepers *Odezia atrata* (L.) and many Crambids [*Donacaula forficella* (Thunberg) to be confirmed as the distribution is usually given as north to York], to near the Traligill caves at the 180 metre contour. On the descent, at 15.45 BST below the remote Glenbain Croft, a dark butterfly flew across the track. My wife, who was slightly ahead, shouted "Scotch Argus". I chased it as it flew, erratically, low over the rough tussocky grass until it settled on a hawkweed flower. At a distance of three feet I could see it was a worn male *Erebia aethiops aethiops* (Esper) ssp. *caledonia* Verity with three ocelli on the forewings and a large u-shaped portion of its left hindwing missing.

When George Thomson was writing *The Butterflies of Scotland* (Croom Helm, 1980) I reported early appearances of the Scotch Argus (see p.184). He took a keen interest in these records and also the surprising discoveries of a Holly Blue *Celastrina argiolus* (L.) and a colony of Speckled Wood *Parage aegeria* (L.) on the Black Isle in Ross-shire (*Ent. Rec.* **81**: 284).

Between 1964 and 1993 I operated Highland Safaris, a minicoach business, taking naturalists and RSPB courses on week-long tours of Ross-shire and the North-west Highlands. Every two weeks, from Easter onwards, we were based in Sutherland at Durness. Few butterflies were seen on the early weeks of each season though a low number of the Scotch Argus was occasionally recorded. For interest the details are as follows:

7 July 1971 – one on Handa NC14

5 July 1977 – two at Sandwood Bay NC26

6 July 1977 – *ca* ten on Handa

23 June 1982 – one at Ardmore, near John Ridgway's Adventure School NCI5

7 July 1982 – one on the north coast at Talmine, Kyle of Tongue NC56

4 July 1984 – one on Tanera Beag, Summer Isles NB90

The above are all coastal localities of West Sutherland (VC 108), except for the Summer Isles record, which is in West Ross (VC 105). These exceptionally early occurrences, from 23 June to 7 July, indicate a local partial emergence. No further examples in the west were noted from 8 to 20 July.

Thereafter the species was encountered on only six occasions:

21 July 1971 – two on Handa

22 July 1971 – one on Faraid Head, Durness NC36

23 July 1971 – one at Rhiconich NC25

26 July 1971 – one on Handa

12 August 1986 – one at Laxford Bridge

20 August 1969 – one at Ardmore

From the sparsity of these record over thirty years it will be seen that this is not a common butterfly in the north-west Highlands whereas in East Ross (VC 106) and East Inverness-shire with Nairn (VC 96) it is abundant in some years (especially in 1975, 1982, 1994 and 1997) with a flight period of the single brood from 21 July to 5 September. DEREK C. HULME, Ord House Drive, Muir of Ord, Ross-shire IV6 7UQ.

Hyloicus pinastri L. (Lep.: Sphingidae): probably a new resident in north-west Kent

When Chalmers-Hunt produced the last relevant supplement to his *Butterflies and Moths of Kent* in this journal in 1980, the total of records for the Pine Hawk had not reached double figures, and their scattered distribution and a paucity of suitable habitats in Kent suggest the moths were wanderers from elsewhere.

My garden m.v. light at Dartford has attracted this insect on the following occasions:

1969 – 13 July

1992 – 7 July

1999 – 20 June

2000 – 13 July and 20 July

2001 – 24 June, 31 July, 7 August, and 13 August

It would seem that the specimens noted in 1999, 2000 and 2001 represent local residents following a recent extension of geographical range; the nearby mixed woodland still contains considerable stands of Corsican pine *Pinus nigra,* as well as some Scots pine *p. sylvestris,* including isolated trees in heath-like clearings. Doubtless this extension of range is from Surrey, which underwent a similar colonisation in the late 1940s, (Collins, 1997. *Larger Moths of Surrey*).– B.K. West, 36 Briar Road, Dartford, Kent DA5 2HN.

Lempke's Gold Spot *Plusia putnami gracilis* (Lempke) (Lep.: Noctuidae): New to Cheshire (VC 58)

On the evening of 20 July 2001, we visited a site in the east of Cheshire (VC 58). The site at the (currently drained) Arnfield Reservoir is predominately mixed birch and sallow woodland, with extensive areas of grass. The conditions for trapping were good; warm and humid although rain set in later in the night. Four mv traps and one actinic trap were set up and about thirty trees were sugared. Good numbers of moths were caught, including a number that are relatively rare in the east of the county. Of particular note was a large number of Light Arches *Apamea lithoxylaea* attracted to sugar; none found their way into the light traps. However, the highlights were two Lempke's Gold Spot, *Plusia putnami*, which are the first records of this insect for VC 58. Specimens were retained and have been confirmed by genitalia examination.

In addition a single Scarce Silver Y *Syngrapha interrogationis* was also found in the very last trap on the very last trap round. According to C. I. Rutherford (1994. *Macro Moths in Cheshire, 1961-1994*. Lancashire and Cheshire Entomological Society, 1994), this represents the second record for the vice-county. Although there is some confusion about the location of the first capture. Although the site for this earlier record is in the current administrative county of Cheshire it is actually in VC57. Therefore, the current record is also a new macro moth for VC58. To illustrate the importance of the vice county system, our traps at Arnfield were actually located in two administrative counties; Derbyshire and Greater Manchester, though all in vice-county 58.–Adrian Wander, Shane Farrell, Paul Greenall, Paul Hill & Steve Hind, 16 Bramhalls Park, Anderton, Northwich, Cheshire CW9 6AH.

Lepidoptera new to the Isle of Wight (VC 10) in 2001

Seven species captured in the Isle of Wight during the year 2001 are new species for the vice-county. On 31 March, Dr David Biggs found mines of the Firethorn Leaf-miner *Phyllonorycter leucographella* (Zell.); Dr John Langmaid confirmed that they were this species. Mark Tunmore reported a Grey Scalloped Bar *Dyscia fagaria* (Thunb.) at Newtown on 2 June 2001. On that night there was a light northerly wind and it is possible that this example was blown across from the New Forest. On 25 June, Brian Warne caught a Sussex Emerald *Thalera fimbrialis* Scop. at Binstead. There were southerly winds at the time and it is most likely that this was a migrant, since the Dungeness (Kent) population did not emerge until two weeks later. Later, on 12 October, Brian Warne also took a Dewick's Plusia *Macdunnoughia confusa* (Steph.) in his garden at Binstead.

On 7 July, I recorded *Ethmia dodecea* (Haw.) in my garden at Freshwater. A couple of weeks later on 24 July, I caught an example of *Eulamprotes atrella* (D.& S.) at Cranmore and finally, on 19 August, I took *Ypsolopha horridella* (Tr.) at light, also in my garden.

I should like to thank David Agassiz and Bob Heckford for identifying the majority of my specimens, which were exhibited at the Annual Exhibition of the British Entomological and Natural History Society, in London, and John Langmaid who confirmed the status of the micro-moths mentioned in this article.– S. A. Knill-Jones, Roundstone, 2 School Green Road, Freshwater, Isle of Wight PO40 9AL.

Correction of a correction

The spelling on the name *Apalus* – hardly, one would have thought, a matter of grave difficulty – appears to have presented unusual problems. So, before my good readers mutter to themselves "that fellow Allen can't spell for toffee") or something similar, let me point out that the "correction" (*sic*) of *Alpus* to *Alpalus* (*Ent. Rec.* **113**: 288) still does not go far enough, and is but a slight improvement. The correct spelling is as cited above, and as noted in *Ent. Rec.* **113**: 268.– A. A. Allen, 49 Montcalm Road, Charlton, London SE7 8QG.

Observations on the Holly Blue *Celastrina argiolus* (L.) (Lep,: Lycaenidae) in an Essex garden

Over the past six years I have been monitoring adults of Holly Blue butterflies attracted to ivy *Hedera helix* in my garden to see if a crash of numbers occurs on a regular basis. The ivy covers a brick wall and extends for 30 metres aligned west to east. The results of this survey are shown in Table 1, below.

Season	flight period observed	number of adults seen
Spring	8. iv. to 13. v. 1996	32
Summer	19. vii. to 10. viii. 1996	49
Spring	1. iv. to 25. v. 1997	20
Summer	26. vii. to 14. ix. 1997	11
Spring	22. iv. to 20. v. 1998	28
Summer	18. vii. to 25. ix. 1998	51
Spring	11. iv. to 29. v. 1999	19
Summer	15. vii. to 4. ix. 1999	8
Spring	16. v. 2000	1
Summer	20. vii. to 1. ix. 2000	44
Spring	3. v. to 28. v. 2001	18
Summer	18. vii. to 24. viii. 2001	81

Table 1: observations on flight period and numbers of Holly Blue butterflies in an Essex garden.

The histogram in Figure 1 shows more clearly the pattern so far noticed, though the results must be regarded as provisional, particularly since observations were made over a relatively short span of years. Nevertheless, the second generation seems to

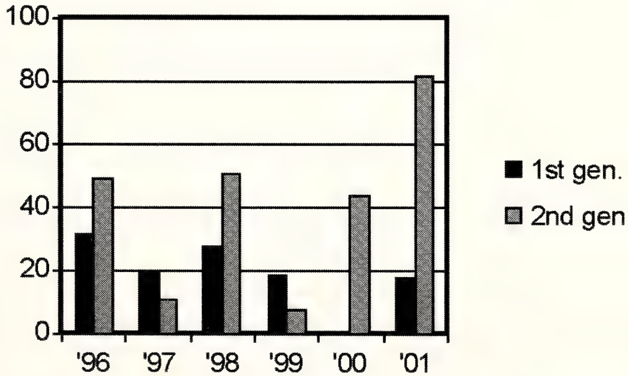

Figure 1. Annual fluctuations in numbers of first and second generation adult Holly Blue butterflies in an Essex garden

fluctuate in alternative years from a high to a low count, whereas the spring generation is more stable with an average of twenty-three adults annually with the exception of the year 2000, when only one adult was seen. This followed a poor summer generation in 1999, evidence perhaps of a population crash due to parasites or poor weather. Interestingly, following this set back, the summer generation of 2000 was immediately back to normal levels.

Six years is clearly not long enough to see if a population crash follows a regular trend and it will be interesting to see if the alternating high-low fluctuation of the second generation is continued (the high numbers in 2001 would appear to be out of step).– BRIAN GOODEY, 298 Ipswich Road, Colchester, Essex CO4 4ET (E-mail: brian.goodey@dial.pipex.com).

SUBSCRIBER NOTICE

Microlepidoptera of Middlesex – final appeal for records

A provisional list of the microlepidoptera of Middlesex vice county – essentially London – will be published, hopefully, in December this year, 2002, in the journal *The London Naturalist*. The list currently stands at 779 species, plus four that are probably correct, but which are not confirmed. This is surprisingly low, at least as an "all time" total, compared with adjacent Hertfordshire, for example, which boasts 883 species. As a matter of passing interest, Middlesex boasts 572 all time macro-moth species, compared with Hertfordshire's 605, and so perhaps the county is less rich in moth species? The last time a list was produced of micro moths in Middlesex was in the year 1898; both the county and its fauna have changed considerably.

Whilst the species may be moderately well reported, their distribution across the county, which includes the ancient woodland at Ruislip Woods National Nature Reserve at one extreme and Soho at the other, is anything but. Surely, there are far more records out there in reader-land than there are on my database? This is your last chance to have them included in the provisional vice county listing. Sent them by post or by e-mail to my address below before the summer moth season starts this year or they will not be included.– COLIN W. PLANT, 14 West Road, Bishops Stortford, Hertfordshire CM23 3QP (E-mail: colinwlant@ntlworld.com).

BOOK REVIEWS

The moths of Devon by **Roy McCormick**. Privately published, 2001. 328 pp., hardbound, 218 x 152 mm. ISBN 09540256 1 X. Available from 47 Oaklands Park, Buckfastleigh, TQ11 0BP. A two-page *Errata* slip accompanies the book.

Subtitled *An account of the Pyralid, Plume and Macromoths of Devon*, this is an important and long-overdue addition to the list of county moth faunas covering the British Isles. The *Introduction*, which opens the work, tells us how the author arrived in Devon to discover that moth recording was at a "very low ebb"; his efforts to get things moving have resulted in the present work. A brief introduction to the *Geology and landscape* of Devon and a brief discussion on *Climate and weather* follow, before an interesting, if somewhat truncated section

entitled *Conservation – a short history.* An equally short section on *Land use* precedes a short *History of Recorders*, in which some of the key personnel in the field of research into Devon Lepidoptera are briefly discussed.

Rapidly approaching the main part of the work, we now encounter a section entitled *Species no longer seen.* This lists 21 formerly "indigenous" species, but ignores immigrants and vagrants. The cut-off date, by which a "species no longer seen" might be defined, is not given but the stated last records are during the 1950s and 1960s for most species and 1986 for the White Satin Moth *Leucoma salicis* (L.). The unfortunate punctuation of the heading *Species that have been recorded in Devon, mainly, since VCH (1906)* implies that what follows is a list of species that are less frequent outside the county; in reality it aims to list species that have only been recorded within Devon in the years since publication of the *Victoria County History*, as opposed to those that were recorded in the earlier period only or in both periods. However, as implied by the word "mainly", this is a regime that is not too rigidly adhered to and species such as, for example, the Devonshire Wainscot *Mythimna putrescens* (Hb.) are included even though they were recorded in the county long before 1906. Since all of the species data included in this section are repeated in the main list later, this information might have been presented more effectively in a Table, with the species name listed against the year of the first record? Similar comments apply to the two-page section on *Migration* which now follows, since it is not at all clear if this section presents a complete list of immigrant moths in Devon or if it is a discussion limited to representative species.

At last we reach the list of moth species recorded in Devon. The moths are presented in the order of the latest (Bradley, 2000) checklist, also adopting the nomenclature used in that work (though minus the parentheses around authority names) and with the now standard "Bradley and Fletcher" code numbers introducing first English then scientific name. Status is allegedly categorised as Moderately widespread, Widespread, Common, Very Common or Abundant, according to the introductory section, although only three species into the list I see that the Gold Swift *Hepialus hecta* (L.) has no given status and, two pages further on, the Forester *Adscita statices* (L.) is defined as "Local". Species are variously discussed under the joint heading of vice-counties 3 and 4 or under the headings of one or both of the two vice-counties that make up the whole. A *History of Devon publications* discusses some of the literature sources used. According to an earlier section entitled *Systematic listing and method of compilation* the records are split into two date bands, on either side of the mid to late 1970s: presumably, then, the "Recent sightings" section in each species entry relates to records made since this vague general period?

It will surprise some to learn that there are no distribution maps, though it may in fact please others. My personal view is that this is a mistake. For one thing, the various Devon locations are meaningless to me, since I do not know the county; for another, taking as an example the Kent Black Arches *Meganola albula* (D.& S.), I have no idea if the 27 records since 1980 are all from one site, from 27 different coastal locations, widely spread across the county, restricted to the uplands, or confined to urban areas. Even if a record relates to a single one-kilometre map square, then this moth occupies, as a maximum, 0.38% of the available territory (approximately 7200 possible grid squares), making it either exceedingly rare or grossly under-recorded. A map would perhaps have made up for the lack of a list of the post-1980 records? It should be added, however, that from discussion with Roy before publication I appreciate that he disagrees with me and that the lack of maps was a deliberate policy. Perhaps as a concession to the likes of me (?), there is a single map at the end of the species accounts, indicating theone-kilometre map squares from which records have been received. All bar seven of the 92 ten-kilometre squares affected by Devon have at least one record but, regrettably, no indication is given of the period of years included.

An extensive Gazetteer lists 730 county sites mentioned in the text. A list of sources is followed by a section called *Recorders past and present*. Although the latter presents several lists of contributing names, there does not seem to be a list of recent contributors – at least there is no trace of one with my own name on it. A final section presents some rather nice half-page colour plates of Devon moth localities and then, finally, some colour plates of moths, printed eight to a page.

A two-page list of *Errata* accompanies the book, which was printed from artwork supplied by the author. Whilst the abilities of the author cannot be faulted, and the scientific content is surely reliable, it is particularly unfortunate that this important work appears to have been plagued by an inordinate number of typographical, punctuation, grammatical and layout errors which, sadly, detract from and mask its true importance. It is fair to say that, in spite of these, and my other criticisms (since the author is a friend I could scarcely let him get away scot free!), this book stands out as *the* work of reference on Devon moths at the end of the twentieth century.

Reference: Bradley, J. D., 2000. *A checklist of Lepidoptera recorded from the British Isles*. Privately published.

A field guide to the butterflies of the Funchal Ecological Park and Madeiran Archipelago by **Andrew Wakeham-Dawson, Michael Salmon and António M. Franquinha Aguiar**. Câmara Municipal do Funchal, 2001. 127 x 220 mm., paperback. No apparent ISBN. Available from the first author at Hesperus II, Nine Elms Pier, Nine Elms Lane, London SW8 5PZ. £20 inclusive of UK postage and packaging.

The Funchal Ecological Park, on the island of Madeira, was created in 1994, and this bilingual (Portuguese and English) booklet is the first exclusively on the subject of butterflies in the park. Beautifully illustrated by young local artist Elisabete Henriques, it identifies the fifteen species recorded from the area and presents them in the wider context of the Madeiran Archipelago. A short introduction covers the location of the islands, climate and vegetation before introducing the park itself, which covers an area of about one thousand hectares, between 520 and 1800 metres above sea level. There is a beginners guide to butterfly identification and classification, including mention of the importance of the male genitalia, an introduction to the life-cycle and ecology of butterflies and a simple key to Madeiran species. Early stages are also discussed. Written by three by established experts on the European butterfly fauna, this booklet is an invaluable guide if travelling to Madeira.

Guide to the dragonflies of Ireland by **Ulster Museum**. Field cards. Publication number 5 of the Museums and Galleries of Northern Ireland, 2001. ISBN 0 900761 44 X. £2.95 plus 80p UK postage and packing. Available from Ulster Museum Shop, Botanic gardens, Belfast BT9 5AB.

This is a set of ten laminated cards, 210 mm tall x 99 mm wide, supplied in a clear plastic wallet; the intention is that they be used in the field as a guide to identification. The guide illustrates all twenty-eight species of dragonfly and damselfly recorded in Ireland since 1970, placing two species on each side of each card. There is a brief Introduction, a Glossary, an Index and list of the habitat preferences for each species. The illustrations are beautifully executed by Richard Lewington and, together with the extremely concise text, enable field identification of the species. The whole pack slips comfortably into the side pocket of a rucksack. Thoroughly recommended.

Continued from back cover

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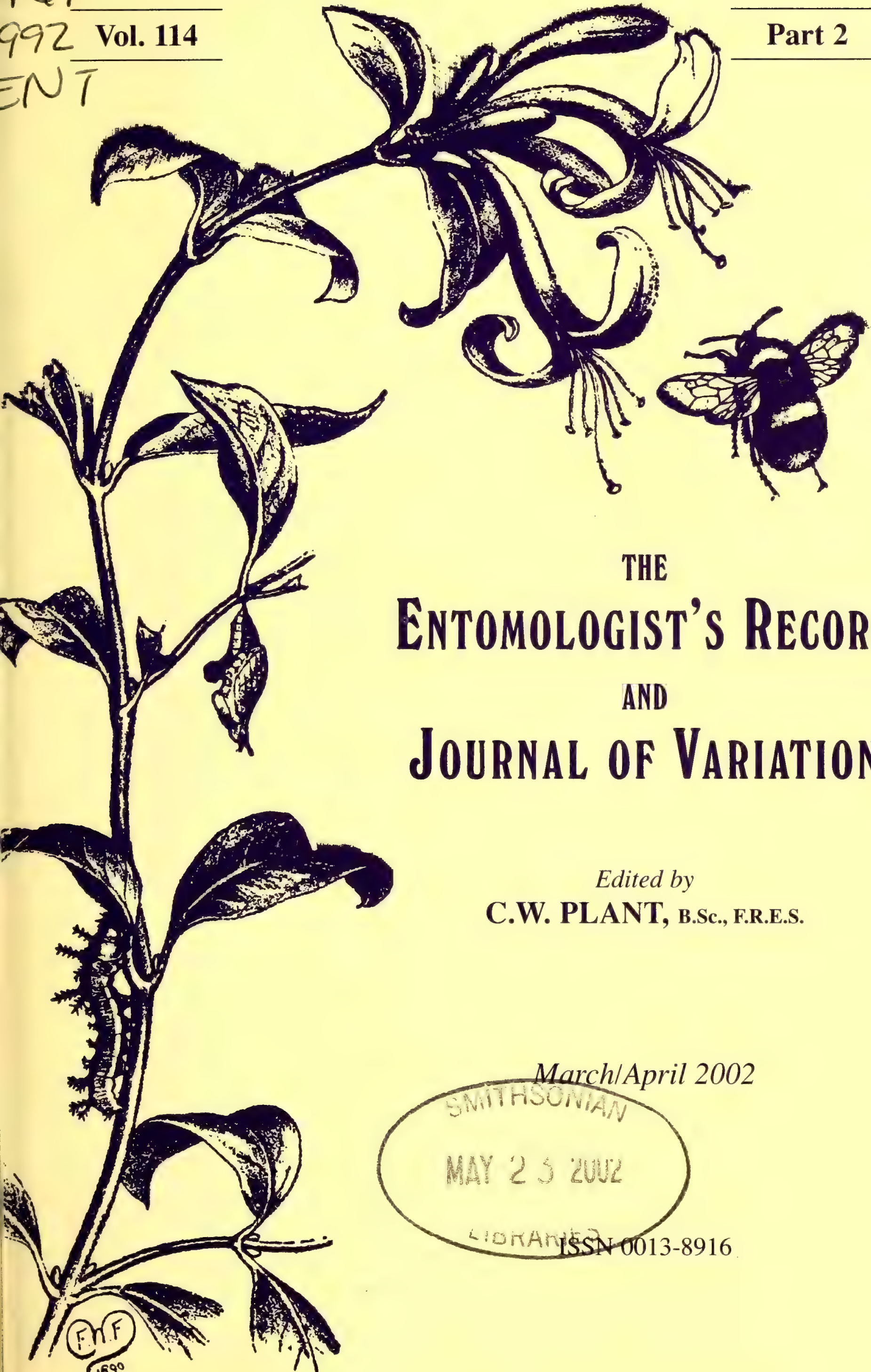

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DISTRIBUTION AND STATUS OF *GORTYNA BORELII* PIERRET SSP. *LUNATA* FREYER (LEP.: NOCTUIDAE) IN SOUTH-EAST ENGLAND

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Abstract

Gortyna borelii lunata Freyer is a rare moth that has only ever been recorded in Britain from the Walton Backwaters area of the North Essex coast. This paper reports the first British population of the species outside this area and compares the two sites. The vegetative conditions differed considerably between the sites, but both support a substantial population of the moth. The discovery of a second population of *G. borelii lunata* will help to secure the future of this species in Britain.

Introduction

Fisher's Estuarine moth (*Gortyna borelii* Pierret 1837, subspecies *lunata* Freyer 1839) is a large noctuid moth with a localised sporadic but widespread distribution in Europe (Ippolito & Parenzan, 1978; Karsholt & Razowski, 1996). In the United Kingdom, the moth has been, to date, recorded only from the Walton Backwaters area of the north Essex coast (Skinner, 1998; Gibson, 2000).

From a historical point of view, *G. borelii lunata* has a relatively recent status in the United Kingdom. In 1968, the first specimens were taken by J. B. Fisher near to the Walton Backwaters area in north-east Essex (Fisher, 1971). Sporadic reports of the moth came throughout the period 1970 to date. Recently a more detailed study of *G. borelii lunata* has examined the life cycle of the moth and its habitat (Ringwood *et al.*, 2000).

The status of the moth in the United Kingdom is "Vulnerable" and it is listed in Category 2 of the *British Red Data Books* (Shirt, 1987). The larval foodplant, *Peucedanum officinale* L. (Hog's Fennel), is also listed within the *British Red Data Books* (Wiggington, 1999) as Lower Risk (Near Threatened). The vulnerable nature of the moth and its habitat led to the species being added, in 1998, to Schedule 5 of the Wildlife and Countryside Act 1981 (Gibson, 2000). *Gortyna borelii lunata* is also included in the Essex Biodiversity Action Plan (Thompson & McClean, 1999) and the Butterfly Conservation Regional Action Plan (Joy & Bourn, 2000) and listed within the Species Recovery Programme of English Nature.

The threats to *G. borelii lunata* in the United Kingdom are many. The principal ones are the vulnerability of the habitat to sea level rise, unsympathetic management of sea defences and land immediately adjacent to the sea wall, scrub encroachment, low population numbers of moth and the illegal collection of specimens. It has been estimated that the Walton Backwaters support approximately 60% of the United Kingdom population of *P. officinale* (Wiggington, 1999). However, the host plant does occur in other locations in the United Kingdom. Stands of Hogs Fennel outside the Walton Backwaters occur in north Kent (Randall & Thornton, 1996) and in south

Suffolk; however, these stands are not as extensive as those occurring in north-east Essex. This paper reports survey work performed at a known site for *P. officinale* and *G. borelli lunata* and a new site in South East England outside of the current population areas in Essex. The results from the two sites are compared in terms of vegetation, incidence of *G. borelii lunata* larval feeding signs and observations of imagines.

Survey Procedures

In July 2001, during the large larval stage of *G. borelii lunata*, the vegetation structure of the sites of *P. officinale* in two locations in south east England (Sites A and B) were surveyed by a quadrat method (10 x $1m^2$). Within each quadrat, the following details were recorded: number of *P. officinale* plants, the height and width of each of these plants, number of *G. borelii lunata* larval feeding signs, the height of the grass, and percentage cover of each of the species of plant present. The percentage cover of vegetation was reported using the Braun-Blanquet Scale (Bullock, 1996) when analysing the data. To obtain an indication of the density of larval feeding signs at each of the sites, one hundred *P. officinale* plants were selected at random, examined, and the proportion with large larval feeding signs was recorded.

An indication of the abundance of *G. borelii lunata* imagines at each of the sites was recorded using an adapted version of the well-established butterfly monitoring transect method (Pollard, 1977). The method involved setting out a transect route at both of the sites, which incorporated all the main stands of *P. officinale*. The transects were walked, at a slow pace, once a week at each of the sites during the flight period of the moth (from the beginning of September to the end of October). Torchlight was used to sight *G. borelii lunata*, and all moths of this species observed 5m from the observer walking the transect were recorded. At the start and finish of each of the transect surveys, details of the weather conditions were noted, including temperature, cloud cover and wind speed (data not shown). All surveys were conducted between 8pm and midnight.

Results and Discussion

Site A consisted of an area covering approximately 17,500m^2 with a highest point of 20m OD, whereas Site B was extant over an estimated 22,700m^2 with a highest point of just 3m OD. Table 1 illustrates differences in the structure of vegetation of the two sites. These differences consisted of the density of *P. officinale* being greatest at the Site B, and the mean height and width of the larval foodplant being highest at Site A.

The main species of grass associated with *P. officinale* at Sites A and B were *Arrhenatherum elatius* and *Elytrigia atherica* respectively (Table 1). The incidence of *Elytrigia atherica* at Site A was low (less than 5% of total vegetation cover). Ringwood *et al.* (2000) suggested that the main oviposition host plant was *Elytrigia atherica* at Site B. This opinion was suggested as the grass species predominated at the sites and possessed the correct morphological characteristics (glabrous leaves and pseudo-stems and rolled leaf sheaths). However, ovipositing was also observed on *Arrhenatherum elatius* and *Dactylis glomerata,* but to a limited extent. As Site A is dominated by *Arrhenatherum elatius*, the likelihood that that species of grass is the main oviposition host plant is high (Table 1).

Table 1. Vegetation characteristics of *Peucedanum officinale* sites

Parameter	Site A	Site B
Mean No. *Peucedanum officinale* per m^2	1.2	2.8
Mean height of *Peucedanum officinale* L. (cm)	130.4	84.4
Mean width of *Peucedanum officinale* L. (cm)	97.4	52.1
Mean sward height (cm)	75.7	81.9
Median Braun–Blanquet score for *Elytrigia* spp.	1	3
Median Braun– Blanquet score for *Arrhenatherum*	3	1

The percentage of *P. officinale* plants with large larval feeding signs was 46 at Site A and 38 at Site B. However, the mean number of imagines observed per adult transect walk was highest at Site B (Table 2).

Table 2. Incidence of *Gortyna borelii lunata*large larval borings and adults at Sites A and B.

Parameter	Site A	Site B
% *Peucedanum officinale* with signs of *Gortyna borelii lunata* large larval borings	46	38
Imago observed between 1 September and 1 November (mean and range of nine transect walks)	18 (0 to 51)	20 (0 to 40)
Total number (over nine weeks) of imago observed per 1000m of the transect	123	160
Date of peak numbers flying	11 October	1 October

The observations of large larval feeding signs and emerging imagines at Site A represent the first recorded population of *G. borelii lunata* outside the Walton Backwaters area of north Essex. The total population of imagines observed throughout the flight period differed in number and distribution considerably between the two sites (Fig. 1). At Site A, the population appeared to increase gradually and peaked on survey 6 (11 October 2001) before decreasing drastically on survey 7 (18 October 2001). The number of adults recorded at Site B, however, increased sharply early on in the season and then appeared to remain stable for three surveys before declining more gradually. The flight period may be later at Site A due to topographical reasons (a relatively exposed site). The greatest numbers of the moth at both sites were recorded when the weather conditions were overcast and relatively mild.

The existing sites in north Essex where *G. borelii lunata* have been observed are vulnerable to sea level rise, unsympathetic management and scrub encroachment. The issue of sea level rise does not, however, affect Site A. Unsympathetic management of the site, damage as a result of amenity use and tourism, and illegal collection are the main threats to the population of the moth at Site A. These issues may pose significant problems to regional and national conservation bodies.

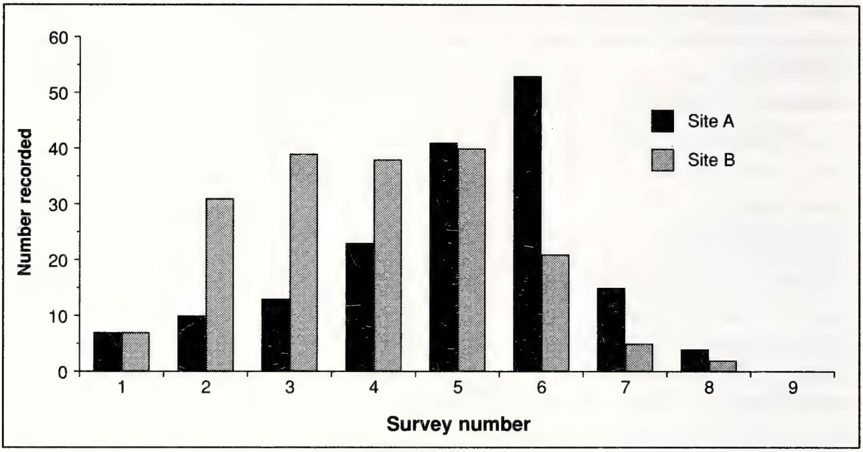

Figure 1. The number of *Gortyna borelii lunata* recorded in each of the Site A and Site B adult transect surveys.

Conclusion

The discovery of a second *G. borelii lunata* population in Britain will help to secure the long-term future of this moth here and has enhanced our understanding of the habitat requirements of the species. However, two issues remain unanswered. The relatively recent occurrence of the moth in the United Kingdom is difficult to explain. The moth is relatively large (50 to 60 mm wingspan) with distinct wing morphological characteristics and is clearly distinguishable from other species of *Gortyna* (for instance *Gortyna flavago*). The current populations in the United Kingdom may be remnants of more extensive historical populations in the north-western Palaearctic or may have been introduced at some time in the recent past. Secondly, the taxonomic status of the moth is still not clear. The status of the United Kingdom populations as subspecies *lunata* was thought to be based originally on differences in wing morphology and colouration (M. Honey *pers comm*). However, specimens of *G. borelii lunata* collected in Hungary and Romania, and of *G. borelii* in Germany show substantial phenotypic variation and it has been suggested by lepidopterists in these countries that *lunata* is not a true subspecies (Axel Steiner, pers. comm.; Laszlo Peregovits, pers. comm.). It is, therefore, suggested that a re-appraisal of the status of the moth in the United Kingdom should be made to clarify the taxonomic position of the *G. borelii lunata*.

Acknowledgements

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CAN YOU SPARE A MOTH LEG?

A genetic study, funded by English Nature, is being conducted to examine the taxonomic status of Fisher's Estuarine Moth *Gortyna borelii lunata*. The project aims to compare the DNA of *G. borelii* specimens from across Europe and to determine whether separation into the subspecies *lunata* is justified. It will also provide information on the genetic variation of the species across its range and determine which populations are the most similar to one another. The work will be conducted using leg material from museum/private collection specimens **from as many different European populations as possible**. At present I am in the process of acquiring material to work from. If anybody has Fisher's Estuarine Moth specimen(s) and would be prepared to donate one of its legs for use in this DNA study please contact Zoë Ringwood at **zkr@writtle.ac.uk** or UK telephone number **01277-655392**. Please do not detach and send legs at this stage – just inform me of what material you have available.

The bumble bee *Bombus terrestris* (L.) (Hym.: Apidae) in mid-winter

Whilst visiting a friend in Rochester, East Kent on 22 December 2001, I noticed a large bee flying around a *Clematis* plant growing on a south-facing wall of a neighbour's house. Taking a pair of 7 × 42 binoculars, I went outside to obtain a better view. The bee, a queen *Bombus terrestris*, was visiting the downward-hanging flowers of *Clematis cirrhosa*, and did this for several minutes until it was lost to sight behind a wall.

Although the sun was shining at the time, this all took place during a spell of rather cold weather. The temperature at the time was a mere 3°C and there was a frost on both that night and the previous one. One wonders if this was a queen from a late brood trying to find sustenance before going into hibernation, or one trying to make an early start to the season.– D. GRANT, 20 Warwick Crescent, Rochester, Kent MW1 3LF.

INVITED COMMENT ...

Bumble bee activity in December was formerly a very rare event and probably the result of a queen having been disturbed from its over-wintering site. However, during the last decade such sightings have become more frequent and widespread and have involved both queens and workers. These records are mainly restricted to those counties along the Channel coast and in southern Ireland. The bees have been *Bombus lucorum* and *B. terrestris*, though records of workers are usually recorded *as B. lucorum/terrestris* as individuals of this caste are very difficult to identify to species with confidence. Queens are generally quite straightforward. Examples of my own recent sightings are as follows. On 13 February 2000 I observed several *B. lucorum/terrestris* workers visiting *Mahonia japonica* flowers in my garden. Their presence on this very early date (especially for workers) indicate nest establishment by their mother in January and quite possibly earlier. I saw a queen *B. lucorum* visiting comfrey flowers in the same garden on 24 February 2001. This individual carried full pollen loads, indicating that it was provisioning its nest. Last year I noted a queen *Bombus ?terrestris* (glimpse only) in a private garden in Broadstone, Dorset, on 24 November. Finally, my wife saw what she thought was a worker *B. lucorum/terrestris* in our garden on 14 December. Chris Haes, in west Cornwall (Angarrack, near Hayle), has also seen bumble bee activity in the winter in his garden.

Whether all these records are of continued nesting throughout the late preceding summer and winter (with colonies finally succumbing late in the winter or spring) or of second or third generations is unknown. I have, for instance, seen queen *B. terrestris* with full pollen loads in the late summer (August) and these might produce their progeny weeks later. Colonies of social wasps, though only of *Vespula germanica* and *V. vulgaris*, occasionally continue well into the winter, with worker activity taking place in an ambient temperature of 1° Celsius or less. Several years ago, I had a nest of *V. germanica* in my house wall, which continued, albeit in greatly reduced numbers, throughout the winter with worker activity noted on both Christmas Day and New Year's Day! The colony finally succumbed by late winter/early spring. Perhaps similar behaviour occurs with *B. lucorum* and *B. terrestris*?– GEORGE ELSE, Department of Entomology, Natural History Museum, London SW7 5BD.

HOVERFLIES OF SURREY - ADDITIONAL RECORDS

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Abstract

Distributional records of hoverflies (Diptera: Syrphidae) and additional records of flower visits made subsequent to the publication of *Hoverflies of Surrey* (Morris, 1988) are given as a supplement to that work.

Introduction

The *Hoverflies of Surrey* (Morris, 1998) was the result of over a dozen years of fieldwork and must rank as one of the most detailed and thorough local lists of this group ever published. However, three full seasons have now passed since the completion of this fieldwork and a number of important new records have been made. As the author, Roger Morris, is now based some distance outside the county, he has asked me to publish my records in the form of an appendix to his work.

The records are grouped in two sections: additional records of rare species and new 10 kilometre square records, and a separate list of further records of flower visits; the latter due to myself and Roger Hawkins. In addition to my own recording, I have been determining insects from a number of Malaise trap samples from various sites in Surrey, run by Jim Brock of the Horniman Museum, Forest Hill to sample parasitic Hymenoptera (Ichneumonidae). Various people, including myself, have "serviced" these traps and their names are included in the list of recorders. I have tried to follow, as closely as possible, the typographic conventions of the original work by Roger Morris.

List of recorders

AJP	A. J. Pontin	GAC	G. A. Collins
CWP	C. W. Plant	JPB	J. P. Brock
DE	D. Element	RDH	R. D. Hawkins

Platycheirus angustatus (Zetterstedt, 1843)
Sydenham Hill Wood TQ3472 (24.4-11.5.1993 and 15.6-1.7.1993, Malaise trap, JPB) – new 10km record.

Platycheirus occultus Goeldlin de Tiefenau *et al.*, 1990
Thursley Common SU9040 (16.7-9.8.1999, Malaise trap, JPB) – new 10km record.

Platycheirus sticticus (Meigen, 1822)
Capel TQ1738 (26.8.1998, CWP, male at ruderal grassland/woodland edge) – third Surrey record and first since 1973.

Platycheirus tarsalis (Schummel, 1837)
Banstead Downs TQ2561 (13.5.2000, GAC; 1-14.6.2000, Malaise trap, JPB) – new 10km record.

Platycheirus rosarum (Fabricius, 1787)

Horsell Common, Woking TQ0060 (21-28.8.2000, Malaise trap, AJP) – new 10km record!

Xanthandrus comtus (Harris, 1780)

Foyle Riding, Limpsfield TQ4149 (8.6.1999, GAC); **Princes Coverts, Oxshott** TQ1561 (4.8.1999, GAC); **Graeme Hendrey Wood, Godstone** TQ3450 (17.7.2000, RDH) – new 10km records.

Chrysotoxum elegans Loew, 1841

Brockham Hills, Dorking TQ2051 (11.8.2000, GAC); **Colley Hill, Reigate** TQ2452 (22.8.2000, GAC) – new (same) 10km records.

Didea intermedia Loew, 1854

Chobham Common SU9864 (11.9.1999, GAC) – a new 10km record and extension of flight period.

Doros profuges (Harris, 1780)

Headley Warren, Leatherhead TQ1854 (2-23.6.2000, 2 females in Malaise trap, GAC) – previously known from this site, but further evidence that Malaise trapping is effective for recording this species.

Epistrophe melanostoma (Zetterstedt, 1843)

Foyle Riding, Limpsfield TQ4149 (8.6.1999, GAC) – new 10km record.

Epistrophe nitidicollis (Meigen, 1822)

Epsom Common, TQ1860 (1-14.6.1993, Malaise trap, JPB) – new 10km record.

Eupeodes latilunulatus (Collin, 1931)

Bagmoor Common, Elstead SU9242 (29.8.1998, RDH); **Banstead Downs** TQ2561 (28.6-12.7.2000, Malaise trap, JPB) – new 10km records.

Eupeodes nitens (Zetterstedt, 1843)

Headley Warren, Leatherhead TQ1854 (14-31.7.2000, Malaise trap, GAC) – new post-1980 10km record.

Meligramma euchromum (Kowarz, 1885)

Nower Wood, Leatherhead TQ1953 (3.5.1999, RDH); **All Saints Church, Carshalton** TQ2764 (5.5.2000, GAC) – further records of this Red Data Book species.

Meligramma triangulifera (Zetterstedt, 1843)

Thursley Common SU9040 (9.8-2.9.1999, Malaise trap, JPB) – new 10km record.

Melangyna cincta (Fallén, 1817)

Foyle Riding, Limpsfield TQ4149 (29.5.1999, GAC) – new 10km record.

Sphaerophoria batava Goeldin de Tiefenau, 1974

Horsell Common, Woking TQ0060 (10-17.7.2000, 17-24.7.2000, 21-28.8.2000, Malaise trap, AJP) – new post-1980 10km record.

Sphaerophoria rueppellii (Wiedemann, 1830)

The Moors, Merstham TQ3052 (22.7.1998, GAC) – new 10km record.

Sphaerophoria virgata Goeldin de Tiefenau, 1974

Horsell Common, Woking TQ0060 (14-21.8.2000, Malaise trap, AJP) – new 10km record.

Callicera aurata (Rossi, 1790)

Ashtead Common, Leatherhead TQ1759 (6-20.7.1994, Malaise trap, JPB); **Chobham Common, Woking** SU9664 (28.6-25.7.1993, Malaise trap, JPB) – two Malaise trap records of this RDB3 hoverfly, one at a known historical site and the other no great distance from the

single modern Surrey site, suggests that it may be an under-recorded species. **Westcott Downs, Dorking** TQ1349 (28.8.2000, DE; 30.8.2000, GAC) – a female on field scabious, first seen by DE, identified by GAC from a digital video still submitted by e-mail and refound on the same patch of flowers 48 hours later. **Park Downs, Banstead** TQ2658 (26.6.2000, RDH).

Cheilosia albipila Meigen, 1838
Princes Coverts, Oxshott TQ1562 (27.3.1999, GAC) – new 10km record.

Cheilosia barbata Loew, 1857
River Hogsmill, Old Malden TQ2066 (3.8.2000, GAC) – new 10km record.

Cheilosia griseiventris Loew, 1857
Happy Valley, Coulsdon TQ3056 (30.4.1999, GAC) – second Surrey record, and very much earlier in the year than the other one (Ball & Morris, 2000, indicate bivoltinism).

Cheilosia nebulosa Verrall, 1871
North Holmwood Clay Pit, Dorking TQ1747 (29.4.2000, GAC) – a new 10km square record for this Red Data Book species.

Cheilosia nigripes (Meigen, 1822)
Nower Wood, Leatherhead TQ1953 (3.5.1999, RDH); **Dollypers Hill, Coulsdon** TQ3158 (13.5.2001, RDH).

Ferdinandea ruficornis (Fabricius, 1775)
Gason Wood, East Clandon TQ0653 (1.4.1999, GAC) – sixth Surrey record.

Rhingia rostrata (Linnaeus, 1758)
St Johns Wood, Dormansland TQ4141 (8.6.1999, GAC); **The Sheepleas, East Horsley** TQ0852 (6.8.1999, GAC); **Yewen's Hangar, Chiddingfold** SU9536 (19.8.1999, GAC); **Headley Warren, Leatherhead** TQ1954 (29.8.1999, 1.9.2000, GAC) – three new 10km records for this Red Data Book species.

Melanogaster aerosa (Loew, 1843)
Thursley Common, Elstead SU9040 (16-7.9.8.1999, 9.8-2.9.1999, Malaise trap, JPB); SU9041 (16.8.2000, GAC) – further records from a known site, one of only three in Surrey.

Myolepta dubia (Fabricius, 1805)
Epsom Common TQ1860 (14.6-2.7.1993, Malaise trap, JPB) – new 10km record.

Neoascia interrupta (Meigen, 1822)
Mitcham (Spencer Road) TQ2766 (22.8.1998, GAC) – new 10km record.

Neoascia obliqua Coe, 1940
Sydenham Hill Wood TQ3472 (6.8-17.9.1993, Malaise trap, JPB) – a very surprising record.

Neoascia tenur (Harris, 1780)
Horsell Common, Woking TQ0060 (17-24.7.2000, Malaise trap, AJP) – new 10km record.

Eumerus ornatus Meigen, 1822
Hedgecourt Lake, Felbridge TQ3540 (21.7.2000, RDH) – new 10km record.

Pelecocera tricincta Meigen, 1822
Chobham Common SU9864 (11.9.1999, GAC); **Ash Ranges, Pirbright** SU9152 (7.9.2001, GAC) – further records of this RDB3 species.

Heringia latitarsis (Egger, 1865)
Westcott Downs, Dorking TQ1349 (8.7.1998, GAC); **Epsom Downs** TQ2258 4.5.1999, GAC) – both new 10km records.

Heringia vitripennis (Meigen, 1822)
Nower Wood, Leatherhead TQ1954 (10.7.1999, RDH) – new post-1980 10km record.

Pipiza lugubris (Fabricius, 1775)
Yewen's Hangar, Chiddingfold SU9536 (19.8.1999, GAC) – new 10km record and the twelfth for Surrey.

Trichopsomyia flavitarsis (Meigen, 1822)
Thursley Common, Elstead SU9040 (2-16.7.1999, 16.7-9.8.1999, Malaise trap, JPB; 18.7.2000, GAC); **Chobham Common, Woking** SU9664 (28.6-25.7.1999, 25.7-17.8.1999, Malaise trap, JPB). **Horsell Common, Woking** TQ0060 (17-24.7.2000, Malaise trap, AJP) – new post-1980 10km record.

Brachypalpoides lentus (Meigen, 1822)
Foyle Riding, Limpsfield TQ4149 (8.6.1999, GAC) – new 10 km record.

Criorhina berberina (Fabricius, 1805)
Epsom Common TQ1860 (25.5-1.6.1993 and 1-14.6.1993, Malaise trap, JPB) – new 10km record.

Criorhina floccosa (Meigen, 1822)
Epsom Common TQ1860 (1-14.6.1999, Malaise trap, JPB) – new 10km record.

Xylota abiens Meigen, 1822
Thursley Common SU9040 (9.8-21.9.1996, Malaise trap, JPB); **Foyle Riding, Limpsfield** TQ4149 (29.5.1999, GAC) – new 10km records and new to east Surrey.

Xylota tarda Meigen, 1822
Foyle Riding, Limpsfield TQ4149 (29.5 and 8.6.1999, GAC) – fifth and sixth Surrey records, new 10km record and to east Surrey, in a wood with much aspen.

Microdon devius (Linnaeus, 1761)
Colekitchen Down, Gomshall TQ0848 (2001, RDH); **Westcott Downs, Dorking** TQ1349 (14.6.2001, GAC).

Microdon mutabilis (Linnaeus, 1758)
Horsell Common, Woking TQ0060 (26.5-12.6.2000, Malaise trap, AJP) – known from this site, but only the tenth Surrey record. **Ashtead Common, Leatherhead** TQ1859 (4.6.1998, GAC, by sweeping in wet grassland) – first in this 10km square since 1949.

Additional flower visits

Melanostoma mellinum (Linnaeus, 1758)
Daucus carota wild carrot.

Melanostoma scalare (Fabricius, 1794)
Helianthemum nummularium common rock-rose

Platycheirus albimanus (Fabricius, 1781)
Silene dioica red campion, *Linum catharticum* fairy flax, *Picris hieracioides* hawkweed ox-tongue

Platycheirus angustatus (Zetterstedt, 1843)
Daucus carota wild carrot

Chrysotoxum festivum (Linnaeus, 1758)
Pastinaca sativa wild parsnip, *Leontodon hispidus* rough hawkbit, *Solidago canadensis* Canadian golden-rod, *Senecio jacobaea* common ragwort

Chrysotoxum verralli Collin, 1940
Calluna vulgaris heather

Dasysyrphus tricinctus (Fallén, 1817)
Calluna vulgaris heather, *Centaurea nigra* common knapweed

Dasysyrphus venustus (Meigen, 1822)
Cornus sanguinea dogwood

Didea fasciata Macquart, 1834
Solidago canadensis Canadian golden-rod, *Succisa pratensis* devil's-bit scabious

Epistrophe eligans (Harris, 1780)
Euonymus europaeus spindle

Epistrophe grossulariae (Meigen, 1822)
Angelica sylvestris wild angelica

Episyrphus balteatus (Degeer, 1776)
Bryonia dioica white bryony, *Calluna vulgaris* heather, *Potentilla erecta* tormentil, *Rosa arvensis* field rose, *Ulex minor* dwarf gorse, *Teucrium scorodonia* wood sage, *Veronica chamaedrys* germander speedwell

Eupeodes latifasciatus (Macquart, 1829)
Linum catharticum fairy flax, *Tussilago farfarae* colt's-foot

Eupeodes latilunulatus (Collin, 1931)
Calluna vulgaris heather

Eupeodes luniger (Meigen, 1822)
Scabiosa columbaria small scabious

Leucozona laternaria (Müller, 1776)
Angelica sylvestris wild angelica

Leucozona lucorum (Linnaeus, 1758)
Anthriscus sylvestris cow parsley, *Veronica chamaedrys* germander speedwell

Meliscaeva cinctella (Zetterstedt, 1843)
Calluna vulgaris heather

Scaeva pyrastri (Linnaeus, 1758)
Daucus carota wild carrot

Sphaerophoria scripta (Linnaeus, 1758)
Potentilla erecta tormentil

Sphaerophoria taeniata (Meigen, 1822)
Stellaria graminea lesser stitchwort, *Clinopodium vulgare* wild basil, *Veronica chamaedrys* germander speedwell, *Picris hieracioides* hawkweed oxtongue

Syrphus ribesii (Linnaeus, 1758)
Hypericum tetrapterum square-stalked St. John's-wort, *Rosa arvensis* field rose, *Buddleja davidii* butterfly-bush

Syrphus vitripennis Meigen, 1822
Buddleja davidii butterfly-bush

Xanthogramma pedissequum (Harris, 1776)
Veronica chamaedrys germander speedwell

Callicera aurata (Rossi, 1790)
Knautia arvensis field scabious

Cheilosia bergenstammi Becker, 1894
Crepis capillaris smooth hawk's-beard

Cheilosia illustrata (Harris, 1780)
Anthriscus sylvestris cow parsley, *Angelica sylvestris* wild angelica

Cheilosia impressa Loew, 1840
Angelica sylvestris wild angelica

Cheilosia scutellata (Fallén, 1817)
Aegapodium podagraria ground-elder

Cheilosia variabilis (Panzer, 1798)
Prunus spinosa sloe

Cheilosia vernalis (Fallén, 1817)
Ranunculus flammula lesser spearwort, *Tripleurospermum inodorum* scentless mayweed

Cheilosia vulpina (Meigen, 1822)
Angelica sylvestris wild angelica

Ferdinandea cuprea (Scopoli, 1763)
Rosa arvensis field rose, *Succisa pratensis* devil's-bit scabious

Rhingia campestris Meigen, 1822
Silene dioica red campion, *Calluna vulgaris* heather, *Melissa officinalis* balm, *Veronica chamaedrys* germander speedwell

Rhingia rostrata (Linnaeus, 1758)
Cirsium palustre marsh thistle, *Cirsium arvense* creeping thistle, *Centaurea nigra* common knapweed

Chrysogaster solstitialis (Fallén, 1817)
Pimpinella saxifraga burnet-saxifrage

Melanogaster hirtella (Loew, 1843)
Ranunculus flammula lesser spearwort, *Stellaria holostea* greater stitchwort

Neoascia tenur (Harris, 1780)
Lysimachia vulgaris yellow loosestrife

Eristalis arbustorum (Linnaeus, 1758)
Rosa arvensis field rose

Eristalis intricarius (Linnaeus, 1758)
Salix sp. sallow, *Knautia arvensis* field scabious, *Leontodon hispidus* rough hawkbit

Eristalis pertinax (Scopoli, 1763)
Calluna vulgaris heather

Eristalis tenax (Linnaeus, 1758)
Eupatorium cannabinum hemp-agrimony

Helophilus pendulus (Linnaeus, 1758)
Erica tetralix cross-leaved heath, *Euphorbia amygdaloides* wood spurge

Myathropa florea (Linnaeus, 1758)
Calluna vulgaris heather, *Euonymus europaeus* spindle, *Centaurea nigra* common knapweed

Pipiza lugubris (Fabricius, 1775)
Angelica sylvestris wild angelica

Sericomyia silentis (Harris, 1776)
Calluna vulgaris heather

Volucella bombylans (Linnaeus, 1758)
Erica tetralix cross-leaved heath, *Cirsium arvense* creeping thistle

Volucella inanis (Linnaeus, 1758)
Daucus carota wild carrot, *Knautia arvensis* field scabious, *Scabiosa columbaria* small scabious, *Cirsium vulgare* spear thistle, *Centaurea nigra* common knapweed, *Eupatorium cannabinum* hemp-agrimony

Volucella inflata (Fabricius, 1794)
Buddleja davidii butterfly-bush

Volucella pellucens (Linnaeus, 1758)
Calluna vulgaris heather, *Cornus sanguinea* dogwood, *Knautia arvensis* field scabious, *Scabiosa columbaria* small scabious

Volucella zonaria (Poda, 1761)
Centaurea nigra common knapweed

Syritta pipiens (Linnaeus, 1758)
Glechoma hederacea ground-ivy, *Solidago virgaurea* golden-rod

Postscript

The article by Gibbs and Plant (2001) announcing the split of *Cheilosia albitarsis* into *ranunculi* Doczkal and *albitarsis sensu* Doczkal led me to review my own specimens from Surrey. Unfortunately, due to the need to rationalise storage space, I have only a couple of males and these have proved on superficial examination to belong to *ranunculi*. The genitalia have yet to be examined, but further fieldwork will be undertaken this year to determine the distribution, habitat and flower preferences of the two segregates.

Acknowledgements

I am grateful to Roger Hawkins for additional records, especially of flower visits, to Colin Plant, to Jim Brock (Horniman Museum) for allowing me to publish records of hoverflies caught in his Malaise traps, to David Baldock and John Pontin for running these traps, and to Roger Morris for suggesting that I publish these records.

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Some observations on breeding Garden Tiger moth *Arctia caja* (L.) (Arctiidae) and on its varieties

I was interested to read Mike Bryan's article on his breeding experiences with this species (*antea*: 36-38) and, having bred many thousands some 30 to 40 years ago for various purposes, would like to add some observations.

I noted in particular his problems in obtaining enough food for them. Even when more usual pabulum was available I nearly always fed mine on *Brassica* cultivars (cabbage, cauliflower leaves, curly kale, sprout tops as available) and when in season, horseradish – the leaves, not the roots! A word of warning, however; be sure you know where the plants have come from. If in doubt test it first on a few small larvae if available. My then neighbours sprayed theirs with so much insecticide it was a wonder they were not themselves poisoned and, very often, that bought in supermarkets was also lethal. I was also on good terms with a local grower who was quite happy to let me have the leaves from sprout and cauliflower plants after harvesting. Mind you, it was no fun collecting them when covered in snow or ice, not to mention pigeon droppings. Harvested in bulk and kept in a refrigerator a large sack full would last a week or ten days.

Although I did not use it for rearing large numbers, *A. caja* readily feeds on semi-synthetic diets as described in Ekkehard Friedrich's *Breeding butterflies and moths* (Harley Books, 1986) and for those who do not like the trouble of preparing their own, the diet is commercially available.

One discovery I made when rearing this species was that in order to prevent the larvae going into hibernation, the young stages must be reared at an elevated temperature compared to that normally experienced by them in autumn. I did discover, however, that there is an optimum, which should not be exceeded. At 20°C, about 50% would break their hibernation and feed on to pupation and the resulting adults could be bred from. At few degrees above this temperature, while almost all would carry on feeding, the resultant adults proved to be mainly infertile. I do not recollect that the photoperiod had any effect on *A. caja*, unlike that which it has on some other species, such as *Pieris brassicae* (L.). Mike is to be congratulated for managing to get through seven generations; his article observes, he did have problems with mating, vigour and fertility.

No doubt because it had a rather small circulation and only ran for 10 years in the 1890s, articles in *The Naturalists' Journal* tend to be overlooked. In 1897, S. L. Mosley published therein *An illustrated catalogue of varieties of British Lepidoptera*, accompanied by 27 Plates of which no less than seven (numbers 12 to 18) show 68 varieties of *A. caja*. Brief descriptions are given, usually mentioning place of capture and in whose collection, but as explained in the text, no names were given to any and an interesting theory put forward as to why they might have occurred. I quote thus: "*Few insects are so liable to vary as this, especially if reared under artificial conditions. We have a large collection of drawings of extraordinary freaks, not two of which are exactly alike. . . . As the varieties are so endless and so intermixed it will be useless to attempt to classify them, so we shall just explain the figures briefly for those who have uncoloured plates.*" This, and other journals a hundred years ago, were often published "penny plain, two-pence coloured." Mosley also goes on to comment that varieties are often obtained more by beginners than by experienced entomologists!– Brian O. C. Gardiner, 2 Highfield Avenue, Cambridge CB4 2AL.

SIGNIFICANT RANGE EXTENSION OF *SPIALIA PHLOMIDIS* (H.-S.) IN BULGARIA (LEP.: HESPERIIDAE)

Stanislav Abadjiev

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The Persian Skipper *Spialia phlomidis* (Herrich-Schäffer, [1845]) is considered great rarity in Bulgaria. It was reported for the first time by de Jong (1978: 52), mentioning material from Rhodopi: Asenovgrad. Three years later Krzywicki (1981: 45) recorded it from the Struma River Valley, Kresna. In 1993, a third locality was found, Mt Slavyanka, Hambar Dere (Kolev, 1994: 152). Adding the above, Kolev expressed the opinion that in the previously reported localities the species occurrence is doubtful.

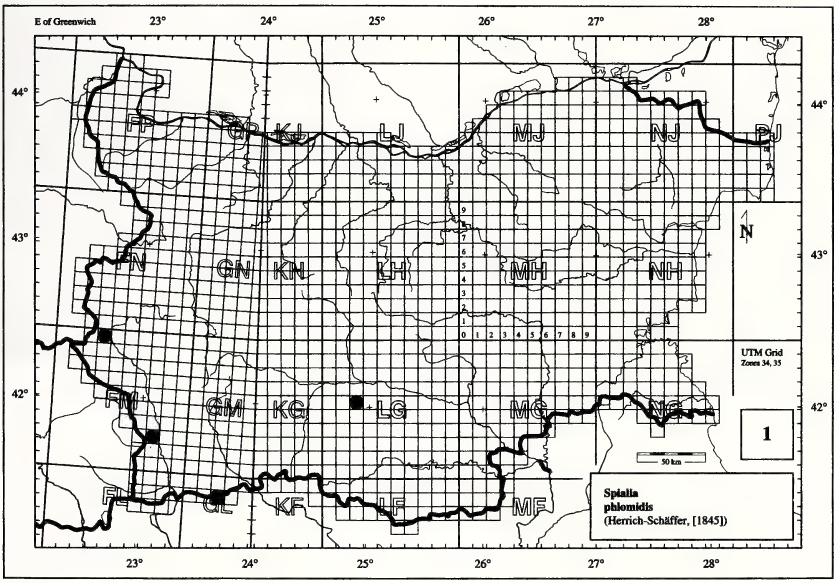

Figure 1. UTM map showing the distribution of *Spialia phlomidis* in Bulgaria: Struma River Valley: 34TFM39: Zemen Gorge: Skakavitsa: 15—16.VI.2000: S. Abadjiev & V. Tuzov leg. (collections S. Abadjiev, S. Beshkov and National Museum of Natural History, Sofia; V. Tuzov, Moscow), 34TFM72: Kresna: 15.VII.1974: M. Krzywicki leg. (Krzywicki, 1981: 45); Slavyanka: 34TGL28: Hambar Dere: 1600 m: 11.VII.1993: Z. Kolev leg. et coll. (Kolev, 1994: 152, 153: Fig. 1); Rhodopi: 35TLG25: Asenovgrad: [350 m] (Zoologische Staatssammlung, München) (de Jong, 1978: 52).

In the middle of June 2000, during a trip accompanied by my friend and colleague Vasily Tuzov (Moscow, Russia), a new colony of the species was encountered in

Zemen Gorge, Skakavitsa. The discovery of *Spialia phlomidis* here represents a significant extension of the known range of the species. All the specimens collected here have been found flying in a dry calcareous river bed (Fig. 2). The first date of collection, 15 June, also extends its flight period; all the previous records have been from July (11, 15) (Krzywicki, 1981: 45, Kolev, 1994: 152). Natural hostplants and early stages still remain unrecorded in Europe (Tolman & Lewington, 1997: 266).

Figure 2. Habitat of *Spialia phlomidis* (H.-S.) in the Struma Valley, Zemen Gorge, Bulgaria.

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A successful method of overwintering the larvae of Fox Moth *Macrothylacia rubi* (L.) (Lep.: Lasiocampidae)

One of the most rewarding experiences available to those who have an interest in Lepidoptera is to breed those species that are of interest to them. Many species of this order are, provided certain rules concerning hygiene, fresh food and good ventilation are followed, comparatively easy to rear from ovum through to adult. There are, however, certain species which have proved exceptionally difficult to rear, especially when the overwintering stage is a larva. Of these, possibly one of the most difficult to overwinter is the Fox Moth.

This moth is essentially a moorland species, although occasionally it may be found on the sand dunes of many coastal counties of Britain. In Northumberland, it occurs in both habitats, but it is most commonly found on Heather *Calluna vulgaris*-dominated moorland. During the early autumn of 2000, I came across several hundred larvae of this species whilst carrying out an invertebrate survey for the Ministry of Defence on their Otterburn Training Area.

Having attempted to rear this species on several occasions over the past forty years without any success whatsoever (all the larvae had shrivelled and died or had become infected with a white fungus which proved equally fatal), I determined to ascertain just what was available as a hibernating medium for these wild larvae, in the immediate vicinity of their foodplant. An extensive search beneath the heather only revealed a thick layer of *Sphagnum* moss growing on very wet peat. It was apparent that waterlogged peat would be unsuitable and, as I had never found larvae on the heather during the winter months, the obvious place had to be within the *Sphagnum* moss layer.

In order to verify this I obtained two large clumps of "leggy" heather, which I planted into two 12-inch (306 mm) diameter plastic buckets. A six-inch (153 mm) layer of *Sphagnum* moss was packed in between the top of each peat filled bucket and the underside of the heather. Wire frames supporting fine mesh nylon sleeves were placed over the foodplant and secured beneath the rims of the buckets. Fifty nearly full-grown Fox Moth larvae were divided equally between these cages.

The completed assemblies were then placed in an exposed situation in my garden where they would receive the full rigours of the winter. The larvae continued to feed until late September then, one by one, they disappeared from view. The winter of 2000-2001 was the worst experienced for several years locally with persistent rain, hail, sleet and snow.

In early April these Fox Moth larvae re-appeared and started basking in the spring sunshine. Although counting was somewhat difficult due to the vegetation in the cages, it appeared that all the larvae had come through without loss. By late April, they had pupated in dark silvery-grey cocoons, some of which were in the *Sphagnum* moss, with the remainder being in the heather. The cigar-shaped cocoons in most cases were twice the length of the resulting pupae, in some instances $2^1/_2$ inches (63 mm) long and half an inch (13 mm) in diameter. Unlike some of the larger moorland moth species, the structure the cocoons was quite soft and fragile. Only one larva failed to make the transition to pupal form and died in the cocoon.

The problems associated with overwintering the larvae of this species are well known and several authors have commented upon this. J. E. Robson (1899. A Catalogue of the Lepidoptera of Northumberland, Durham and Newcastle upon Tyne. *Trans. nat. Hist. Soc. Northumberland, Durham & Newcastle-upon-Tyne* **12**, pt.1) recommended collecting full-fed larvae in spring as overwintering them was so difficult. This problem was partially solved by G. Bolam (1925. The Lepidoptera of Northumberland & the Eastern Borders. *History of Berwick Naturalists Club* **25**) who turned out larvae in the autumn onto the straw mulching on his Strawberry beds, collecting the larvae when they re-appeared in the spring. He did not, however, give any indication of how many larvae were turned out or indeed how many survived.

In all, forty-eight specimens emerged between 29 May and 5 June 2001. Of these 35 were female and 13 male. The colouration of both sexes was typical of local specimens with no variation at all. The male specimens had a wingspan which was remarkably consistent, ranging from 38-40 mm. The females on the other hand, showed considerable variation in wingspan, varying from 40 mm in the smallest specimen to 60 mm in the largest, measurements being made from wing tip to wing tip on set specimens. Surplus adult specimens were released on the site from where the larvae were originally obtained. The remaining single pupa proved to be parasitised; a male *Tachina grossa* (Dip.: Tachinidae) emerged in early July 2001.

It would appear that in order to be successful in rearing this, and perhaps other moorland species which overwinter in the larval stage, the natural conditions of the habitat be duplicated as closely as possible and that exposure to the elements during the winter is an essential requirement. Six larvae of the Ruby Tiger *Phragmatobia fuliginosa* (L.), a species which also over-winters as a larva, were also enclosed in the cages with the Fox Moth larvae. In early March 2001 these larvae re-appeared and started to feed up and by the end of the month had pupated. Six adults of ssp. *borealis* (Stdgr.), the local moorland form, emerged in May 2001.– HARRY T. EALES, 11 Ennerdale Terrace, Low Westwood, Co. Durham NE17 7PN.

Has the flight period of the common spring *Orthosia* species (Lep.: Noctuidae) changed?

Recent issues of this journal have carried a number of reports of unseasonal records of Common Quaker *Orthosia cerasi* (Fabr.) and Hebrew Character *O. gothica* (L.) amongst others. It is good to receive these, since it is judged important in these days of apparent climate change to place on record such observations of clearly relevant aspects of the natural world. With these records in mind, I wondered if there had, at the same time, been any discernible shift in the main flight period of these two species, or of that of any other common Spring noctuids moths.

My garden here in north-east Hertfordshire is the only site for which I have been able to run a trap on a more or less nightly basis throughout a period that includes all of the alleged flight period of these moths, for a substantial number of years that includes 2001 (the last year for which full records can yet be available). I moved here in 1987 and so my analysis involved the 14 years from 1988 to 2001 inclusive, except that in the late 1990s I was, for a variety of reasons, not able to run the trap at the appropriate time of year. The data are presented in Table 1.

Species	parameter	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Orthosia cerasi	1st date	19.iii	8.iii	23.ii	11.iii	17.iii	6.iii	*	*	*	2.iii	13.ii	12.iii	26.ii	11.ii	11.ii
	last date	13.v	18.v	13.v	12.v	14.v	*	*	*	*	*	before 23.v	12.v	13.v	12.v	
Orthosia gothica	1st date	22.iii	10.iii	4.iii	11.iii	17.iii	6.iii	*	*	*	2.iii	20.iii	12.iii	26.ii	9.iii	21.ii
	last date	28.v	27.v	16.v	19.v	22.v	*	*	*	*	*	before 23.v	12.v	15.v	25.v	
Orthosia incerta	1st date	22.iii	19.iii	20.iii	11.iii	17.iii	6.iii	*	*	*	10.iii	14.ii	16.iii	8.iii	7.iii	25.ii
	last date	26.v	23.v	13.v	12.v	14.v	*	*	*	*	*	before 23.v	12.v	15.v	9.v	
Xylocampa areola	1st date	2.iv	10.iii	17.iii	22.iii	17.iii	*	*	*	*	2.iii	25.ii	16.iii	7.iii	15.iii	4.iii
	last date	17.v	23.v	16.v	26.v	22.v	*	*	*	*	*	before 23.v	*	14.v	12.v	

Table 1. First and last dates of selected moth species at Bishops Stortford.

Year 2002 data is incomplete, since this Note was, of necessity, prepared during early March in that year. * Indicates that sufficient trapping was not carried out in the appropriate period to permit distinction of the date indicated (e.g., during 1993 I was away from 7 March and so missed the emergence of *X. areola* and I missed the end of all the species because I was, similarly, elsewhere around the end of May).

The following comments can be made on the data in Table 1:

***Orthosia cerasi* Common Quaker**

In the period 1988 to 1993 emergence appears to be during the first three weeks of March, with an early appearance in 1990 on 23 February. However, from 1997 to 2002, the norm appears to be the first two weeks of February with late-comers on 26 February in 2000 and 2 March in 1997. Thus, there does seem to be a clear trend towards emergence approximately three weeks to a month earlier over the 14 year survey period. However, the flight period ends consistently over this period, between 12 and 18 May.

***Orthosia gothica* Hebrew Character**

During 1998 to 1993, emergence takes place between 4 and 22 March, with no February reports; in the period 1997 to 2002 it is between 21 February and 20 March, with two of the six reports during February. As with *O. cerasi*, there may be a trend towards earlier emergence, though it is less clear cut in this species. The end of the flight period falls within the range of 12 to 28 May in all years.

***Orthosia incerta* Clouded Drab**

Adults appear consistently between the second and third weeks of March (range 6 to 22 March) except during 2002 when the first record was made on 25 February (nine days ahead of the stated range). This one odd occurrence may be a fluke and is not statistically significant. As with the previous two species, there is no discernible shift in the end of the flight period, last records falling in the period 9 to 26 May throughout the 14 years.

***Xylocampa areola* Early Grey**

Although there is a wide range of first dates, from 4 March to 2 April, there does not seem to be a trend towards earlier emergence. The end of the flight period is, as in the other species analysed, unaltered, falling between 12 and 26 May.

This is all terribly unscientific and I am sure that my academic colleagues will probably excommunicate me! However, it does appear that at least the Common Quaker, and perhaps also the Hebrew Character, may be tending towards a generally earlier emergence. It is of interest that, in spite of this, the end of the flight period is unaltered for all the species studied; for the moths, like me, early retirement is obviously not on! If this snippet of information motivates others to approach the matter in a more scientific manner I shall consider this note to have been well worth writing.–
COLIN W. PLANT, 14 West Road, Bishops Stortford, Hertfordshire CM23 3QP (E-mail: Colinwplant@ntlworld.com).

A further autumn record of the Common Quaker, *Orthosia cerasi* (Fabr.) (Lep.: Noctuidae)

Brian Goodey (*antea*: 35) reported the occurrence of a specimen of *Orthosia cerasi* (Fabr.) in South Essex on 16 October 2001. I can add that I caught one in my garden in Earley, near Reading (O.S., grid reference SU 735710), almost exactly ten years earlier on the night of 8-9 October 1991. The specimen is in my collection.

My garden mercury vapour trap is not run routinely, but was run on the four nights 7 to 10 October 1991, producing the *cerasi,* expected autumnal species and one late brood example of the pyralid *Hypsopygia costalis* (Fabr.) (on 9 October 1991).–
NORMAN HALL, 44 Harcourt Drive, Earley, Reading RG6 5TJ (E-mail: norman.hall@talk21.com).

Noteworthy insects observed on Afton Down, Isle of Wight in 2001

Afton Down, also known as Compton Down, lies between Freshwater Bay and Compton Bay. There is a chalk-pit just off the road on the left where cars can park just before Compton Farm, travelling east. It faces due south and is a superb spot for many species of butterflies and other insects. In the past ten years I have recorded many of the earliest and latest dates of butterflies for the Isle of Wight in this locality. This area is an entomologist's paradise.

On the morning of 5 June, I visited this locality and it was not long before I noticed a fritillary which, at first sight, I thought must be a variety of the Glanville Fritillary *Melitaea cinxia* (L.). However, on closer inspection I was convinced that it was in fact a Marsh Fritillary *Euphydryas aurinia* (Rott.). During the afternoon, I revisited the site and was pleased to find that the butterfly was still there. This time I netted it, and have kept it as a voucher specimen to prove that it was this species. This butterfly was recorded at Parkhurst Forest in the early twentieth century and a strong colony was discovered by J. Wright at Cranmore in 1947: numbers gradually diminished, and none were seen since 1956. It was then introduced at two localities at Newtown in 1993, and survived there until May 1998. However, this example suggests that there may be a colony somewhere on the Island awaiting discovery.

On 6 September, I visited the chalk-pit and noticed a female wasp spider *Argiope bruennichi* (Scolopi) in a large web amongst long grass, just below a blackberry bush. The first example of this magnificent insect was recorded on the island on a field trip of the Isle of Wight Natural History & Arachnaeological Society at Hamstead Dover on 18 August 1979 (Pope, 1998. *Proc. Isle of Wight nat. Hist. archaeol. Soc.* **14**). Two more were recorded in August 1983, at Whippingham Churchyard and at Spinfish, Freshwater. This spider soon spread eastwards, becoming quite widespread, although there were no reports from the south of the Island until 1993, when it was found in August at Blackgang Ledge and Bonchurch. My example is a further record for the south coast of the Island and John Ralph has recently discovered it a few miles east of Afton Down at Alverstone. This spider remained in the same position for over a week before it disappeared. I noticed that it had successfully caught in its web a Small White *Pieris rapae* L. and later a Chalk-hill Blue *Lysandra coridon* (Poda). On the same day I observed several Great Green Grasshoppers *Tettigonia viridissima* L. and I have seen further examples there up to the beginning of October.

On 9 September, accompanied by Gillian Langton, I noticed a dark dragonfly flying from the road into the chalk-pit. It soon settled on some herbage where we had a very good sighting of it. With its jet black body and thorax, black legs and black pterostigma it was undoubtedly a Black Darter *Sympetrum danae* (Sulzer). This is the first authentic record for the Isle of Wight since K. G. Blair recorded it at Freshwater Marsh in 1950. Strangely enough, John Ralph saw a further example on 12 September at Alverstone, a few miles away. Whether this was the same insect as seen on Afton Down three days earlier remains a matter of conjecture.

On 29 September, I was visiting this locality when I disturbed a white moth which, on close inspection after it had settled, was an example of of the migrant Pyralid *Palpita unionalis* (Hb.). This was the first record of the year on the Island for this species which is usually taken at light.

On a further visit on 3 October, I noticed a pair of Adonis Blues *Lysandra bellargus* (Rott.) *in copula*. The female was freshly emerged and possibly could be an example of a partial third brood. The rather tatty male was more likely to be a late second brood example.

There are several late butterfly dates worthy of mention. On 6 September I observed a Small Skipper *Thymelicus sylvestris* (Poda) caught up in a spider's web. It was still alive and I managed to release it. The last Small Heath *Coenonympha pamphilus* (L.) and Chalkhill Blue *Lysandra coridon* (Poda) were seen on 3 October on Afton Down and a female Adonis Blue *Lysandra bellargus* (Rott.) was observed just above the chalk-pit on 5 October. This is the latest date that I have ever seen this butterfly.

It was the warmest October since records began in 1659 and the warm sunny weather continued right up to the end of the month. On a further visit to Afton Down on 27 October I saw a very late freshly emerged male Meadow Brown *Maniola jurtina* L. which must have been an example of a partial second brood. The latest ever sighting in England of this species was on 2 November 1980 in Devon (Archer-Lock, *Ent. Rec.* **92**: 266). On a sunny day on 31 October, I visited the same locality at eleven o'clock and noticed a small brownish butterfly flying at the top of the chalk-pit. I soon got close to it and observed that it was a female Long-tailed Blue *Lampides boeticus* L. It rested on some blackberry and sunned itself for several minutes before flying to another part of the chalk-pit. I went home to get a net but it had gone on my return. Other butterflies present on that day were two Painted Ladies *Cynthia cardui* (L.) and several Red Admirals *Vanessa atalanta* (L.). On 3 November, at noon, Andy Butler observed a further Long-tailed Blue in his garden at Ventnor. These are the first records for the Island for this species since the summer of 1952 when three were seen, one at Cranmore by J. Lobb, 30.vii.1952 (French, 1953, *Entom.* **86**: 161) and a pair in my garden at Freshwater when my elder brother, Robin, succeeded in netting the female.

I would like to thank Dave Wooldridge for reading and commenting on the manuscript and Barry Angell, Andy Butler, Jim Cheverton, Gillian Langton, John Ralph and Ian Rippey for help and information in writing this note.– S.A. Knill-Jones, Roundstone, 2 School Green Road, Freshwater, Isle of Wight PO40 9AL.

Boreus hyemalis (L.) (Mec.: Boreidae), *nearly* new to Suffolk

Two specimens of the Snow Flea *Boreus hyemalis* (L.) were found amongst moss at Cavenham Heath, Suffolk on 20 January 2002 by myself and Roger Northfield from Cambridge University Zoology Department. Both were male examples and found 'hopping' on the common heathland moss *Dicranum scoparium* (Hedw.) about two hours before dusk on a dull, wet and windy day that reached a maximum of 10 degrees Celsius. I reported our find to Colin Plant who informed me that this is the first formal record of *B. hyemalis* from Suffolk.

Our find was the result of a number of years searching (often on hands and knees) in appropriate Breckland habitat and is the first time I have seen *Boreus*, though Roger recalled seeing it more than 30 years earlier while searching Suffolk heathland

with students from the Zoology Department. Colin's distribution information prompted Roger to scour the Cambridge University Entomology Museum's spirit collection where he found a tube containing five preserved specimens, three males and two females, labelled *Boreus hyemalis*, Foxhole Heath, Eriswell, Suffolk, 14 November 1968!

Thanks to Colin Plant for information concerning the current status and distribution of *B. hyemalis* and to Tim Pyner for identifying the moss for us.– MARCEL ASHBY, 30a Alexandra Road, London N8 0PP.

An oddity regarding the Small Angle Shades *Euplexia lucipara* (L.) (Lep.: Noctuidae)

When I first used a mercury-vapour lamp to attract insects, at Blackheath near here in 1959, the above distinctive moth was a rather common visitor to it. Yet here at Charlton, barely three miles distant, to which I moved in 1973, it seemed wholly absent and has remained so. There is no suggestion that *E. lucipara* is very local or, as far as I know, that it has become much rarer than formerly. I can offer no reason for this striking difference, which seems worthy of mention.– A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

EDITORIAL COMMENT These local variations in abundance are a source of constant fascination for me and, no doubt, different factors will likely affect different species. I used to catch *E. lucipara* regularly, and regarded it as fairly common, in my former garden in East Ham (London) in the 1980s. Yet no more than 500 metres away from there, as the Small Angle Shades flies, I think I only ever caught it once in five years during the same period at the East Ham Nature Reserve. The larvae of this species feed on ferns, and in my former garden were certainly associated with the plants of Male Fern *Dryopteris filix-mas* growing there. The same fern grew in reasonable number in the nature reserve but did not produce the moth, though I did sometimes find larvae. If nothing else, Mr Allen's observations emphasise that a light trap alone is not sufficient to adequately record the moths of any site. As the late Maitland Emmet used to repeatedly say to me – there are those who run light traps … and then there are entomologists!

Natural history as a diversion from war: the Privet Hawk-moth *Sphinx ligustri* (L.) (Lep.: Sphingidae)

As a teenager, I became very interested in natural history mainly because it was a natural escape from the Second World War, with all its attendant horrors. Life changed for me the day a bomb fell a few hundred yards from me as I was leaving school on my bike. I was blasted to the ground, smashing my violin case and surrounded by scurrying shrapnel. Up until then I had been a keen collector of crashed German aircraft "bits", shrapnel and bullets. The bullets had become

embedded in the pavements and roads as a result of aircraft "dog-fights". Every day I used to scour the pavements for them and then dig them out of the tarmac. After the bomb incident I didn't want anything to do with war; I gave my "war trophies" away and turned instead to the study of nature. I soon realised that the natural world was as brutal and destructive as man, but was unlikely to harm me.

Instead of searching the paths for bullets I searched for caterpillar droppings! The large droppings that I found beneath privet bushes and *Forsythia* were a sure indication that large caterpillars were feeding on the foliage above. As a result, I found several Privet Hawk-moth caterpillars on bushes and took them home and fed them in a cardboard box until they were ready to pupate. Just before they were ready they started to turn brown, ready for the descent down the stem of the plant they were on. I put some earth in the bottom of the box and the caterpillars buried themselves. The following year the adults emerged.

A few years ago, whilst walking in the New Forest, I was surprised to discover some Privet Hawk-moth caterpillars feeding on a small Holly bush *Ilex aquifolium* on Picket Plain; I had never found them feeding on Holly before. I had been aware of the small bush for at least a year because it was on its own amongst the bracken and gorse. A week or so before I noticed the caterpillars, the ponies had "pruned" the holly in their search for food. I watched the progress of the larvae for several days and took photographs of them feeding. The bush is still there and has been nibbled by ponies from time to time, but no sign of Privet Hawk caterpillars in recent years.– LANGDON ROWE, 70 The Mount, Poulner, Ringwood, Hampshire BH24 1XY.

EDITORIAL COMMENT Another reference to holly as a foodplant of this species can be found in Dean (2002. *Bull. Amateur Entomologists Soc.* **61**: 23-24).

Notes from the bug room – 2

After a glass or two, I frequently argue that *Pieris napi* L. is the only interesting butterfly in the British Isles. Even when sober I would still defend my contention though in a gentler manner using more acceptable language! My friend Boyd Barr of Balinluig, Perthshire bred a lot of *napi* during 1999 and 2000 in an attempt to obtain a series of the Scottish yellow form which differs markedly from the famous ab. *sulphurea* Schoyen bred by H. W. Head from Irish stock many years ago. I have always been interested in Scottish *napi* and when Boyd offered pupae bred from a local female I gratefully accepted them (Remember my *dictum*? Always beware of gifts from friends – you never know where they will lead!). The pupae arrived in July 2000. There were 30 or so and five emerged immediately. The remainder stubbornly refused to emerge despite the heat and humidity of my sunroom (my remembering to open a window is the only form of climate control in the sunroom, so for most of the summer it resembles the Congo in a heat wave!). Outside in the garden, local Somerset *napi* were appearing freshly emerged into September. Why didn't the Scottish pupae hatch? What is different about them?

Thomson (1980. *The Butterflies of Scotland*. Croom Helm) states that the "most significant" difference between the Scottish subspecies *thomsoni* Warren and more

southern *napi* is to be found in the androconial scales of the male. He observed that whereas southern males have scales of only one shape, *thomsoni* males possess androconial scales of up to six different shapes. Here, then, was a starting point in exploring the differences between Scottish and English *napi*.

Firstly, I needed a method of examining scales from my numerous specimens of *napi*. I used a soft paintbrush to remove scales from the wings and scattered these over a smear of Numount on a microscope slide. On with the coverslip and the job was done. Except that under the microscope I could see absolutely nothing! The refractive indices of glass, mountant and scales must be virtually the same so the scales effectively vanished. Staining was required.

Figure 1. Androconial scales from a *P. napi* taken on the foreshore at Aros, Isle of Mull, 23.v.89 (slide 0029).

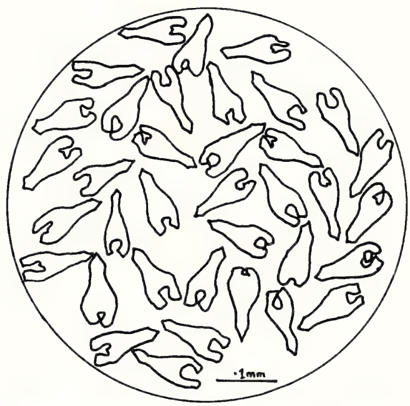

Figure 2. Androconial scales from a *P. napi* taken on the foreshore at Aros, Isle of Mull, 23.v.89 (slide 0026).

My final method for producing permanent slides is as follows. Number the specimens to be examined and write this number in permanent marker on each glass slide. Remove the scales by gently rubbing the wing with a "cotton bud". Use a new cotton bud for each specimen and scrape the same area of wing each time (the base of the right forewing for me). Smear Acid Fuchsin in alcohol in the centre of each slide and "flick" the scales over it. When the alcohol has evaporated, secure a coverslip over the smear by means of Numount. Seal on a heated metal tray and attach a permanent slide label showing the number and full collecting data of the butterfly concerned.

Now under the microscope appear thousands of crimson scales amongst which the characteristically shaped androconial scales are easily detected. A cursory examination revealed that these scales do indeed vary in size and shape. The next problem I encountered was in ascribing a scale to one of the six types illustrated by

Thomson (op cit). Some were easy but many fell "in between" his categories. Frustrated, I pondered this problem against the limitations of both my equipment and my ability. "I got nowhere" as they say!

Later, talking to Boyd about drawing specimens from the microscope, he planted the seeds of a plan in the infertile soil of my imagination. (*Dictum* number two – Always beware of helpful advice from friends!) By placing a cheap, but effective, quartz-halogen bench lamp beneath the stage of my trusty Watson "Service" monocular microscope I could cast an image from a slide, greatly magnified, on to a suitable screen. I placed the lamp and microscope on the floor of the bug room between two chairs. Across the two chairs and over the microscope I positioned a sheet of thick plate glass to which was stuck a sheet of draughtsman's paper. Upon this appeared a circle of light containing a sharp, detailed image of hundreds of *napi* scales!

By scrolling slowly through the slide using the excellent Watson stage I chose the first 50 androconial scales as they appeared on the "screen" and traced their outline using the fine 0.1 mm pen I use for writing data labels. Providing the distance between the microscope and the screen remained constant all the drawings would be to the same scale and, therefore, directly comparable. Progress at last!

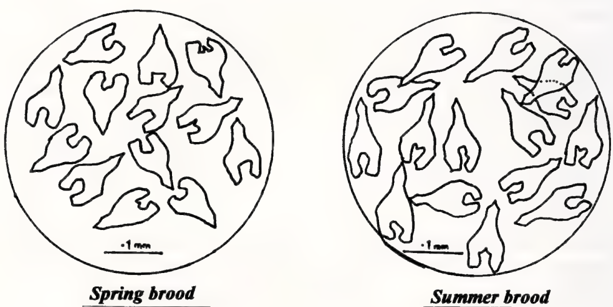

Figure 3. Androconial scales from spring brood (slide 0002) and summer brood (slide 0007) *P. napi* both bred from a female taken at Blackwell, Worecestershire in 1985.

Quickly, I built up a series of drawings of androconial scales from a range of British localities and a couple of French ones. It was clear that the scales did vary geographically but it was still difficult to describe those differences in an objective way. It slowly dawned on me that each scale needed to be measured and, once again, a lack of equipment and ability combined to halt progress!

Would it be valid, I mused, to measure the tracing rather than the actual scale? Each scale has a "fixed point" in front. From this I used a compass set at 6 mm and 15 mm to intersect the outline of the scale. By measuring between each pair of intersections I had two widths taken for each scale at a known position. I then measured from the "fixed point" to the most distant point on the outline to produce a measure of maximum length. I now had drawings, rows of figures and a headache!

It is time for a confession. I have a morbid fear of mathematics born out of an absolute lack of ability in the subject. It took me two goes to pass O-level maths and even then it was a damned close-run thing. I avoided lectures on statistics at university. The only figures that interest me are female! Bear all this in mind as you read on. I wanted to combine the three measurements into a single figure for each scale. The word "ratio" emerged from the depths of my subconscious. It meant nothing to me and I sent it back! I can only suggest that the formula I eventually used was induced by exposure to the fumes in my killing jar. I added together the maximum length, the widths at 6 mm and 15 mm and then divided the total by the maximum length. Don't ask why. I just did it. OK?

I now had a list of single figures which related to each individual scale – a Scale Index in fact! A short, fat scale for example would score in the 1.8's whereas a long thin one came in at around the 1.5's. In a final flurry of mathematical achievement, I grouped the scores for each specimen and drew graphs to illustrate the differences between them. A sample graph is shown. It suggests that the two Isle of Mull males from Glengorm (0033) and Aros (0026) have similar androconial scales. 0029, however, though taken alongside 0026 had scales which tended more towards the first brood southern males here illustrated by a specimen from Blackwell, Worcestershire (0002). I then collapsed and vowed *never* to do anything like that again!

So what does all this prove, you ask? Nothing, I reply, with a suggestion that you read the works of Karl Popper before you ask for scientific proof! The drawings do confirm that the androconial scales of *Pieris napi* vary geographically, seasonally

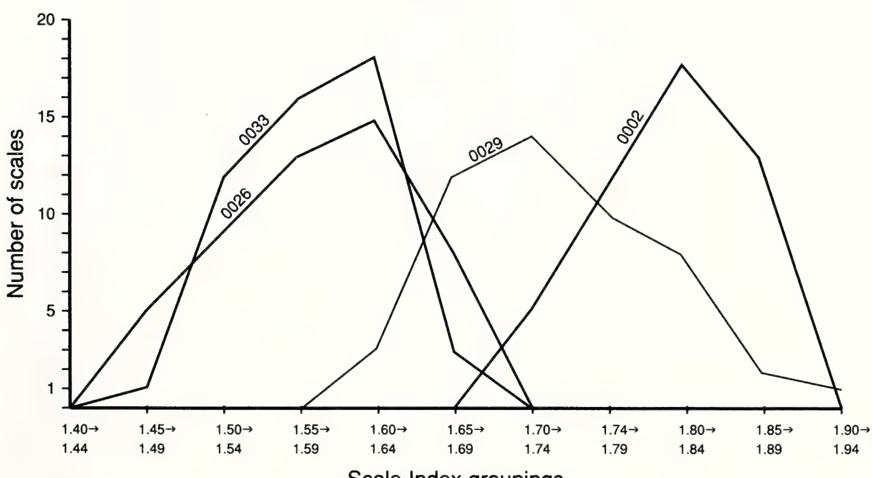

Figure 4. A graph illustrating differences in androconial scales from four specimens of *P. napi* from the Isle of Mull and Worcestershire (see text).

and between individual males of the same population flying at the same time. Look at the scales from the two males taken 23.v.89 on the foreshore at Aros, Isle of Mull (0029) has short, fat scales in contrast to the narrower, more elongate scales of 0026. A similar difference can be seen between two generations of Worcestershire specimens bred in 1985 and 1986 from the same female – very strange. A comparison between first generation males from northwest Scotland and the English Midlands confirms Thomson in that the northeners *tend* to exhibit a range of scale shapes whereas the southerners *tend* towards a more uniform short, squat scale at least in the spring brood. Much work remains to be done!

Back to the livestock and a (non-mathematical) reality. The Perthshire pupae eventually emerged in April, 2001 and, as always with *napi*, were ridiculously easy to pair. I had 217 second generation pupae by the end of May. Of these, 67 emerged in early June but the rest stubbornly refused to do so and are overwintering in my shed as I write (October). The June butterflies produced a third generation of 63 pupae of which only a *single male* emerged in the first week of July. The remaining 62 have joined their uncles and aunts to sleep away the winter months in my outdoor shed. Presumably, both generations will emerge together in April 2002? Is this a "hedge-your-bets" strategy to deal with unpredictable northern summers? What controls the emergence process? Is this perhaps the really significant characteristic of subspecies *thomsoni*?

Incidentally, most of the overwintering pupae of both generations are of a pale straw colour. Green overwintering pupae accounted for 12% of the second generation and 31% of the third. Once this mathematical approach gets hold it never lets go!

My only firm conclusion from all this is that my original contention is true. *Pieris napi* really is the most interesting British butterfly!– MIKE BRYAN, Extons, Taunton Road, Bishops Lydeard, Somerset TA4 3LR.

An update on the Silurian moth *Eriopygodes imbecilla* (Fab.) (Lep.: Noctuidae) in Monmouthshire in 2001

The *Butterfly Guardians* weekend workshop at Abergavenny on 23/24 June 2001, organised by Nichola Davies and Norman Lowe for Butterfly Conservation, provided an opportunity to inspect the known locality for the Silurian moth *Eriopygodes imbecilla*, five years after my last visit in 1996. The workshop covered the field craft and other tips helpful in finding the adults and larvae of this and other relevant UK Biodiversity Action Plan Priority Moths and the High and Medium Priority Moths listed in Butterfly Conservation's National Action Plan for Wales (compiled by Jenny Joy, 1998). The workshop culminated in ten of us camping and light-trapping in the Silurian gullies in the nearby mountains on the night of 23 June. The aim was to show the group the Silurian moth and the habitat in which it occurs so that local group members could recognise and explore other potential sites and

possibly locate other breeding areas. We operated two Robinson traps all night in the gully where the Silurian was first discovered in Britain in 1972 (*Ent. Rec.* **88**: 246-248) and two more Robinson traps in similar habitat about 2 km to the north where I discovered the moth in 1995 (*Ent. Rec.* **108**: 24-25, 149-150 & *British Wildlife* **7**: 53-54). These are still the only places in Britain where the moth is known to be resident. A single male was captured in a light-trap in Abergavenny, Monmouthshire, on 6 July 1999 by Sally Brown in her suburban garden some 10 km from the known breeding grounds and another singleton was light-trapped just over the English border in the Black Mountains of Herefordshire on the night of 12/13 July 1999 by Mike Harper, some 20 km away (*British Wildlife* **11**: 59). Additional trap-nights at the latter in 2000 failed to find more but there was much potential habitat beyond the range of the trap and it is to be hoped that both these singletons are an indication of the existence of undiscovered colonies.

We recorded seven male Silurian near the top of the original gully (trap-site A), two in the trap at the bottom (trap-site B), two more in a sheltered hollow in the mountainside (trap-site C) at the second site and none by a nearby stream (trap-site D). These results can be compared with the numbers seen on my previous light-trapping visits in 1995 using the same equipment and techniques.

Trap-sites	**Numbers of Silurian moth in traps on dates in 1995**			
	27 June	**29 June**	**3 July**	**4 July**
A	49	38	17	
B	58	65	36	
C				17
D				3

The lower numbers on the earlier trapping date (23 June) in 2001 probably reflect only the less advanced stage of the flight period. All the individuals were in fresh condition. As in 1995, there were no Silurian when the traps were first inspected at midnight, all arrived later, hence the necessity to operate the traps all night, and all were males (my visits in 1996 were unsuccessful searches for larvae in daylight and after dark on 17-18 April, 11-12 May and 26-27 May.)

The sites and habitat where we saw the Silurian in 2001 looked in just the same condition as in my photographs of the sites taken during the flight season in 1995. Heath Bedstraw *Galium saxatile*, the suspected larval foodplant, was in full flower and abundant in the gullies and sheep-tracks.

I thank Butterfly Conservation for covering my costs as lecturer and leader on this workshop and thank all those who attended. I hope that the search for the Silurian in the other likely places which exist in south Wales and the Black Mountains will be intensified as a result and that undiscovered populations will be found.– PAUL WARING, 1366 Lincoln Road, Werrington, Peterborough PE4 6LS (E-mail: paul_waring@btinternet.com).

Butterflies on the Greek Island of Samos, 12 – 26 September 1999.

As many readers will be aware, disastrous fires swept large parts of the island of Samos (eastern Aegean) in July 2000. Apart from the cost to the island's human inhabitants, it is clear that important wildlife habitats have also been lost. As studies continue to assess these losses, and to chart the hoped-for recovery, the following account of a visit to the island the year before the fire may be of some interest.

In the early evening of 12 September, my wife and I arrived at our hotel in Kokkari, an attractive fishing village and tourist resort on the north coast of the island. The butterflies were to be only a minor distraction from our primary aim of a relaxing holiday. I had in any case learned from correspondence with Alain Olivier that September was most certainly not the best time to visit the island for butterflies. Nevertheless, I harboured the thought that since most other entomologists would no doubt agree, I might discover something interesting by an "off-season" visit. The village itself offered a nice choice of alternative environments: the sea-front, lined with tourist-oriented restaurants and cafes, or the main street, with a more traditional café/restaurant, and a superb bakery/café, where we spent most of our evenings discussing the meaning of life with the owner and family.

The richness of the local wildlife was evident from the first evening – a Hummingbird Hawk-moth in the hotel garden, the swooping flight of bats, and a huge centipede making its way across the street. In the days that followed, conventional holiday pass-times alternated with "casual" entomologising. I located three interesting patches of habitat adjacent to the village, and these were regularly visited throughout the holiday. In addition, we undertook regular walks into the nearby hills to two lovely villages – Vourliotes and Manolates – these walks offered splendid views out over Kokkari and the sea beyond, and the villages themselves retained their traditional charm whilst offering a fine selection of cafes and restaurants! On the way to these villages and on the hillsides above were a range of habitats including abandoned agricultural terracing, Mediterranean maqui scrubland, olive and vine plantations, and, at higher altitudes, light pine woodland. Our visits to other parts of the island yielded no entomological surprises, and were disappointing in other ways too.

So, the low-level sites close to Kokkari. The first of these was a small field at the edge of the village, which sloped down to the sea. It may have been used for livestock grazing, but at the time of our visit was unmanaged, with rank grasses, bramble scrub, and patches of a species of mint with long drooping flower-spikes (*Mentha longifolia*?). There was a path down one side of the field, with a ditch and damp patches. The remaining bramble flowers and the *Mentha* provided nectar sources, scarce at this time of year, for a range of insect species, and there was a continual flow of nectaring visitors, in addition to what I took to be resident breeding species in the field. Over the course of the holiday, I recorded the following species here: *Papilio machaon, Iphiclides podalirius, Pieris rapae, Colias crocea, Leptidea sinapis, Lampides boeticus, Leptotes pirithous, Polyommatus thersites, Charaxes jasius, Vanessa cardui, Polygonia egea, Hipparchia fatua, Hipparchia senthes, Maniola telmessia, Charcharodus alceae, Gegenes pumilio* and *Pelopidas thrax*.

Of these, the most interesting to me were *M. telmessia* and *P. thrax*, as two species I had never encountered before. The first is a species of "meadow brown" whose

main distribution is the middle east and Asia Minor, and restricted in Europe to the islands of the eastern Aegean. In appearance it is very similar to our own *M. jurtina*, but it is somewhat smaller, with a more rounded shape to the fore-wings, and often with double apical ocelli. The females varied considerably in the amount and distribution of orange coloration on the upper-side, some approaching the appearance of *M. tithonus*. The phenology of this species is very interesting, in that adults emerge from mid April onwards, with mating taking place during the spring. The females then aestivate through the hottest months, and only when activity is resumed are the eggs fertilised and laid (see Olivier, 1993. *The Butterflies of the Greek Island of Rodos*. Antwerp: VVVE, pp. 142-76). I had expected to see only females in mid to late September, and for these to be in poor condition. However, though many individuals were worn or damaged, some were in very good condition, and this included several males among the population flying at this site. Females, especially, were observed nectaring from the *Mentha* flowers, usually settling, opening and closing their wings two or three times, and then nectaring with wings closed. Males were more often seen, especially early in the day, settled with wings open. Both sexes sought the shade under scrub during the hottest part of the day. Despite close observation, no "courtship" or mating behaviour was observed. The species was still flying with no evident decline in numbers or condition on our last day, 24 September.

P. thrax is a large, dark "skipper", similar in general appearance to *Gegenes pumilio* and *nostrodamus*. Like *telmessia*, this species has an easterly distribution, which includes Africa and the Far East as well as the Middle East. In Europe, it appears to be confined to Samos, though Tolman (1997. *Butterflies of Britain and Europe*. HarperCollins), also gives Rhodes. The large white spots on the uppersides of the fore-wings are distinctive, and the males have an oblique white band of androconial scales, also on the fore-wings. In this site, males were observed in very small numbers (two or three at most) settled, wings half-open in typical skipper pose, in sun-spots along narrow tracks (presumably made by grazing mammals?) which wound through the rank grasses and bramble scrub. They were easily disturbed, and flew off very rapidly. The males of this species were found more commonly at another site, a dry river-bed at Platanakia, a coastal resort just to the west of Kokkari. Here they were occupying exposed, sunny spots on rocks, with wings half-open. They appeared to be territorial, flying up to "chase off" other males of the same species, and also passing individual *G. pumilio* or *M. telmessia*, which were also present.

Of the other species at the small field close to Kokkari, *G. pumilio* was seen here only once – a female nectaring on the *Mentha*, as was the striking Southern Comma (*P. egea*). The "blues" *L. boeticus* and *L. pirithous* were quite common, and frequently observed nectaring on the bramble and *Mentha*. One rather worn *Carcharodus sp.* was seen in the first few days, but was not definitively identified. Occasionally *P. machaon, I. podalirius* and rather worn *C. jasius* passed through the field, but didn't stay around.

The second site close to Kokkari village was a damp field next to the village by-pass, which was the site of a half-completed building project of some kind. A dry stream-bed marked one edge of the site, and there was an extensive stand of *Typha* (sp.).

Bordering on the road was a wide fringe of flowering plants, notably willowherb (probably *Epilobium hirsutum*), *Lotus sp*., and a large, white-flowered bindweed (*Calystegia silvatica*?). I only discovered this site on 20 September, so could not observe it as thoroughly as the first site. However, it too, offered important nectar-sources, and was visited by Humming-bird Hawk-moths (*Macroglossum stellatarum* L.), *P. machaon, P. brassicae, L. boeticus, P. icarus, C. alceae, G. pumilio*, and *P. thrax*. At this site, both males and females of *thrax* were observed, nectaring from the willowherb flowers, along with a smaller number of *G. pumilio* and one *C. alceae* (female). One female *thrax* was observed settled with wings half-open, sunning itself on a dry grass-leaf. *G. pumilio* was also observed nectaring from the bindweed.

Our frequent walks up into the hills behind the village took us up a narrow lane to the west of the village, and across a stream bed, at this time of year a rather muddy trickle. Here, at an altitude of approximately 50 metres above sea level, it was possible to observe large numbers of butterflies and other insects coming in to sip up water and/or mineral nutrients in the heat of the day. This site, like the first, was observed frequently through our stay. Butterflies seen here included: *Lycaena phlaeas, Thecla quercus, Celastrina argiolus, Aricia agestis, Polyommatus thersites, C. jasius, Limenitis reducta, V. atalanta, Hipparchia syriaca, H. mersina, H. senthes, H. fatua, Maniola telmessia, Kirinia roxelana, Carcharodus sp.,* and *P. thrax*. Males of *H. syriaca* were repeatedly observed persistently "courting" females, but always unsuccessfully.

At higher altitudes, in the hills overlooking Kokkari and the coast, the various "grayling" species were very much in evidence, especially along tracks and in more open areas of low scrub and abandoned agricultural terraces. At one wet area below a small farm reservoir we saw *A. agestis*, *H. fatua*, *H. syriaca*, *H. mersina* ("mud-puddling") and many *M. telmessia*. Both *H. syriaca* and *H. fatua* were most often observed at rest on the trunks of pine or olive trees, or on rocks or stone walls, with occasional flurries of activity as they moved to new resting-sites. Tree-heather was in flower in one area we passed, and numerous *M. telmessia* were nectaring from it. The "strawberry tree" *Arbutus unedo* was common in the maqui, and we saw a few, rather worn, *C. jasius*. The very dark late brood of *L. phlaeas* was on the wing, and we also saw one male *L. sinapis*, white and entirely unmarked except for the black tips to the forewings.

On 17 September 1999, we decided to try a more demanding walk up beyond the village of Manolates towards the peak of Mount Karvouni. In the environs of the village we saw numerous *T. quercus*, as well as one *P. machaon*, several *P. brassicae*, *Gonepteryx cleopatra*, *H. syriaca*, *C. alceae* and *M. telmessia*. The track was not easy to follow, frequently crossed by new motor-trails, and often blocked by fallen trees. In an open area in the pine woodland, at between 600 and 700 metres, there were numerous "grayling" butterflies, mainly settled on pine trunks and branches. These included *H. syriaca*, *H. senthes*, and one *K. roxelana*, as well as several very worn and tattered individuals of *H. mersina*. The woodland was sufficiently open for dappled sunshine to penetrate, and *H. mersina* seemed to settle mainly in "sun-spots" on the pine trunks. Occasionally they would fly briefly, occasionally indulging in

"courtship" chasing, and then settle once more. *H. syriaca* behaved similarly, but with a swifter, "swooping" flight, and looking much darker. *H. syriaca* were frequently observed on rocks as well as tree trunks.

H. mersina was also seen on 21 September, in very similar open pine woodland, between the village of Vourliotes and Vrondianis monastery (300-450 metres). As at the previous site, they were worn and tattered, and noticeably smaller than the species with which they were flying. One male was observed unsuccessfully "courting" a female, and on one occasion a *syriaca* was observed "chasing" a *mersina*. The most common species here was *H. syriaca*, with *senthes*, in apparently fresh condition, being encountered at slightly lower altitudes. A few *Pararge aegeria* were also seen in open pine woodland in this area.

On 24 September, a final visit to the stream bed at the edge of the village revealed the same mix of species as usual, but with the addition of a male and female of *H. mersina*. These, unlike those seen at higher altitudes, were in quite fresh condition. They looked very different from the *H. senthes* also present at the site. The latter were much more clearly marked on the underside, with more strongly contrasting colour patterns. Tolman (*op. cit.*) gives the altitudinal range of *H. mersina* as 300 metres upwards on Samos and the flight period as mid-May to mid-July. These specimens appeared to be in fresh condition in the last week of September, and at approximately 50 metres. Olivier and de Prins (1989. *Phegea* **17**(4): 169-221), note the early emergence of *H. mersina* on Lesvos (earliest recorded 10 April) as a possible reproductive isolation mechanism *vis-a-vis H. pellucida* (not recorded from Samos). In their account, most females had already mated, and males were mostly worn by 17 to 23 June (in 1987). They supposed that the females aestivate and that oviposition takes place between late August and early September. In view of this, the presence of fresh males and females at a low altitude site in late September is surprising. So, also, is Tolman's observation of both very small and full-grown larvae in April. These observations together suggest the possibilities either that *H. mersina* is double-brooded, or, more likely, that the emergence of some individuals may be delayed until late summer or autumn. Clearly, there is room for more sustained study of the phenology of this species. It also seems that the lower limit of the altitudinal range is much lower than Tolman gives – quite possibly down to sea level.

In the course of the two-week stay from 13 to 24 September 1999, we were able to observe adults of some 32 species, roughly half the recorded butterfly fauna of the island. The full list of those species is as follows:

Hesperiidae
Carcharodus alceae (Esper)
Carcharodus sp. (orientalis/stauderi?)
Gegenes pumilio (Hoffmannsegg)
Pelopidas thrax (Hb.)

Papilionidae
Iphiclides podalirius (L.)
Papilio machaon (L.)

Pieridae
Leptidia sinapis agg.
Pieris brassicae (L.)
Pieris rapae (L.)
Pontia edusa (Fabr.)
Colias crocea (Fourc.)
Gonepteryx cleopatra (L.)

Lycaenidae
Lycaena phlaeas (L.)
Thecla (=Quercusia) quercus (L.)
Lampides boeticus (L.)
Leptotes pirithous (L.)
Celastrina argiolus (L.
Polyommatus (=Aricia) agestis (D.& S.)
Polyommatus (=Agrodiaetus) thersites (Cantener)
Polyommatus icarus (Rott.)

Nymphalidae
Vanessa atalanta (L.)
Vanessa cardui (L.)
Polygonia egea (Cramer)
Limenitis reducta (Stdgr.)
Charaxes jasius (L.)
Kirinia roxelana (Cramer)
Pararge aegeria (L.)
Maniola telmessia (Zeller)
Hipparchia syriaca (Stdgr.)
Hipparchia mersina (Stdgr.)
Hipparchia (=Neohipparchia) fatua (Freyer)
Hipparchia senthes (Fruhstorfer)

One disappointment was our inability to find the small eastern satyrid *Ypthima asterope*, and we were also unable to confirm the presence of the skipper butterfly *Carcharodus stauderi* (not so far recorded from the island), owing to its similarity to its close relative *C. orientalis*.– TED BENTON, 13 Priory Street, Colchester CO1 2PY. (E-mail: tbenton@essex.ac.uk)

Hazards of butterfly collecting. The "best" butterfly day of my life – Gambari, Nigeria, 1969

I wangled a one-day trip to the Gambari Forest in early August 1969. I had been on my second three-month trip to Nigeria; my father was working for UNICEF so after a long trip in the bush one could always revert to the bosom of one's family, get European food, and sleep in an air-conditioned room. I had already stretched the concept of term leave at the University of Copenhagen by 14 days to either side, so it was to be my last trip this time round.

Gambari has a long pedigree in African insect research since it is the experimental grounds of the Nigerian Cocoa Research Institute, easy of access from Ibadan, and with residential facilities. I had always wanted to visit, so it was a fine "last chance" that I was determined to grab. I went early to bed after having kindly been conveyed to Gambari from Ibadan, by the driving force in Nigerian entomology at the time, Prof. A. Youdeowei, editor of the Nigerian Entomological Society.

The next morning I was up at dawn and went out to take stock of the situation while munching some McVitie's Digestive Chocolate Biscuits; you can easily live on these for an entire day if necessary, though in hot climates a knife may be necessary to prize them apart from the melted chocolate (someone once called these biscuits a highlight of English achievement, or words to that effect).

The forest is not very large, probably less than 100 square kilometres, and it is transected by a grid of paths and forest roads, cutting the forest into numbered grids. Some are left in pristine condition, some are well-developed secondary growth, some are old dispersed cocoa with even older shade trees, others younger cocoa, and a few experimenting with the new-fangled idea of growing cocoa without shade trees. Here and there little rivulets crossed the roads, promising good mud-puddling later in the day.

As I went about the tedious work of hanging up *Charaxes*-traps and putting out fermenting fruit, it was clear that the day would be just right – not too hot, fine blue skies, with occasional passing clouds. It had the potential for being a fine farewell to Nigeria, especially since my butterfly-spotting skills were by now finely honed.

Action started at 08.00, and accelerated from there. Rarely had I seen butterflies in such numbers and such variety, a large number of which I could identify without having to catch them, so that I could concentrate on the more difficult groups of blues and skippers. There was no real time to collect the large nymphalids in the traps; just check them and tip everything out, since once you have 20 specimens in one trap it becomes difficult to retrieve any specially interesting one. I must have released more than 200 *Charaxes* that day, mostly in perfect condition. By noon mudpuddling really took off. Dozens of species, mostly lycaenids, not seen elsewhere turned up as if by magic, probably out of the canopy, and it was one of those days when even the pretty Sapphires of the genus *Iolaus* came to water. Inside the forest were a plethora of Hesperiidae, several of which I had never seen before. Here and there, usually at considerable intervals, were really good ant-trees, where the little liptenids flew around the tree-trunks, some settling on twigs and creepers near the base of the tree, others flying well beyond reach.

By the time butterfly activity tapered off, it was clear that I must have caught more species than I had ever done in a single day. However, there was barely time to paper the day's haul before nightfall, so it remained an impression. There was no electricity; the Nigerian Electric Power Company's acronym (NEPA) is usually, and aptly, rendered as "Never Ever Power Anywhere". So an hour's reading by flashlight and off to an early sleep. The next morning I had an additional two hours' collecting before someone kindly picked me up to go to Lagos.

Once back in my parents' bungalow I was able to make a provisional list. It came to nearly 250 species during 26 hours' collecting, by far the largest daily total I have had anywhere; normally on a really good day in a rainforest in West Africa the total is 140-150, but evidently everything conspired that day to yield a maximum. The 250 species noted probably comprise a third of all the butterflies found in western Nigeria and almost half of those present in Gambari. I might add here that for some reason that I have not fathomed, species numbers in Oriental rainforests are always much lower than in Africa (75-80 is a good haul in Thailand, Indonesia, Malaysia, the Philippines, and Papua New Guinea, at least in my experience), while in the Neotropics the daily totals are like the African, though the number of species present in a given locality is twice as high. Anyhow – the code-words for my exceptional catch in Gambari must have been: a very good season in general, perfect weather conditions, easy access to numerous habitat types through the network of paths, and my six months of cumulated experience.

I left Nigeria on a high note. But species numbers is not everything. A year later I was in Lebanon where just 150 species gave me the greatest pleasure for five years and where a catch of 35 species in a day was phenomenal. I wrote my book on "The Butterflies of Lebanon", then covered Jordan and the Arabian Peninsula, Egypt, progressing to Kenya and Botswana. It would not be till 1993 that I again got seriously to grips with the butterflies of Nigeria.– TORBEN B. LARSEN, Bangladesh, World Bank, 1818 H. Street N.W., Washhington D.C., 20433, USA.

White-spotted Pinion moth *Cosmia diffinis* (L.) (Lep.: Noctuidae): Beating for larvae and light-trapping for adults in Huntingdonshire in 2000

In *Atropos* number 10, pages 5-9, I proposed searching for caterpillars of the White-spotted Pinion moth *Cosmia diffinis* on elms in different situations. A particular aim was to discover whether or not the caterpillars occur mainly on epicormic growth on elm, that is the foliage that grows from twigs produced directly from the trunk. That was the considered opinion of the late A. J. Wightman, a much respected caterpillar hunter, as quoted by Gerry Haggett (1981. T*he larvae of the British Lepidoptera not figured by Buckler*. BENHS, London). If generally true, this observation could explain both the massive decline of this moth following the ravages of Dutch elm disease from the 1970s onwards, and its apparent failure to make use of the low elm re-growth now abundant again in hedgerows and elsewhere in the English countryside. A dependence on epicormic-type growth, or the woodland situation in which it occurs, might limit the moth to breeding in the few places where mature elm trees survive. This article focuses on the results of beating for larvae at one of the surviving strongholds for the moth in Huntingdonshire, partly to illustrate the use of the "ten-spot beat" as a general method for investigating patterns in the distribution of moth larvae on trees and shrubs. The exciting thing about beating is that, while you do not always find what you are looking for, there are usually some pleasing surprise catches, and this session was no exception. We were also out light-trapping for the adult moths later in the year, logging a total of 18 site-nights in Huntingdonshire between 22 July and 29 August.

During 2000, the White-spotted Pinion was light-trapped in six of the eleven sites where it was sought in Huntingdonshire, and in at least one site just over the border in Cambridgeshire. The light-trapping confirmed that the moth occurs in woods, copses and overgrown hedgerows without mature trees, but all of the places where it was recorded offered abundant supplies of elm foliage in the shade of an elm canopy above and sheltered by other elms all around, rather like the situation and micro-climate in which epicormic growth is often found. The moth was seen from 4 – 29 August, with the largest catch in one trap being seven, on 14 August. Almost all the other trap-nights with a positive result produced only one moth, which is notably lower than the numbers which have been recorded in the last few years. This probably relates to cool wet weather during the larval period. Just our luck in the year we decided to concentrate on this species! All the moths arrived between 21.45 and 22.30 hours.

The two Tables below show the results of our beating for larvae. Table 1 shows all the species of caterpillars we found and the number in each of our samples. Samples a – r were the results of beating on 22 May 2000 (19.00 – 22.00 hours, dead calm, clear and dry after showers in day). Samples 1–9 were obtained by PW on 5 June 2000 (14.30 – 15.00 hours, calm, dry, mild, overcast). All samples were standard ten-spot beats. The ten-spot beating sample as a means of standardising sampling effort for comparison of different situations was described by Waring (2000. *Atropos* 10: 5-9). For example, Table 1 shows that two Winter Moth larvae were found in sample (a), drawn from low saplings. Table 2 gives more details about each sample.

It shows that sample (a) was from Wych Elm saplings 6-7 metres tall growing under an open sky, rather than below an elm canopy like some other samples. Most of the larvae were identified on site and released again after the end of the sampling, taking only a few for confirmation.

Table 1. The species and numbers of moth larvae obtained from elm by beating in four different situations. Samples a to r and 1 to 9 are indicated within round brackets and each is followed by the number of larvae in each sample. Negative results are omitted from the table.

Winter moth *Operophtera brumata* (L.)

Low saplings (<6m tall): (a) 2, (c) 1, (d) 2, (e) 1, (f) 2, (g) 2, (h) 1, (i) 2, (l) 1, (n) 4, (p) 3, (r) 5

Low branches on tall trees: (1) 1

Trunk growth on tall trees: (j) 1, (m) 2

Tree canopy: (o) 4

Comments: Total 34 larvae. Larvae frequent in all four situations.

Dunbar *Cosmia trapezina* (L.)

Low saplings (<6m tall): (a) 1, (g) 1, (i) 2, (l) 1, (r) 1, (3) 2

Low branches on tall trees: –

Trunk growth on tall trees: (j) 3, (m) 1

Tree canopy: –

Comments: Total 12 larvae. Larvae frequent on low growth and epicormics.

Lunar-spotted Pinion *Cosmia pyralina* (L.)

Low saplings (<6m tall): (c) 1, (k) 1, (3) 2

Low branches on tall trees: (1) 1

Trunk growth on tall trees: –

Tree canopy: –

Comments: Total 5 larvae. Larvae present both on low regrowth under open sky and on the lower branches of mature trees under a full canopy.

Satellite *Eupsilia transversa* (Hufn.)

Low saplings (<6m tall): (a) 1, (i) 1, (q) 1

Low branches on tall trees: –

Trunk growth on tall trees: (4) 1

Tree canopy: (o) 1

Comments: Total 5 larvae. Larvae present on low regrowth, epicormics and in the canopy, even possibly more frequent in the latter.

Mottled Umber *Erannis defoliaria* (Clerck)

Low saplings (<6m tall): –

Low branches on tall trees: (b) 1

Trunk growth on tall trees: (4) 1, (5) 1

Tree canopy: –

Comments: Total 3 larvae. Not very frequent. Apparently absent from the low regrowth in the open.

March Moth *Alsophila aescularia* (D.&S.)

Low saplings (<6m tall): (d) 1, (e) 5

Low branches on tall trees: (2) 1

Trunk growth on tall trees: –

Tree canopy: –

Comments: Total 7 larvae

Common Quaker *Orthosia cerasi* (Fab.)

Low saplings (<6m tall): (e) 1, (i) 1, (p) 1

Low branches on tall trees: –

Trunk growth on tall trees: (m) 1

Tree canopy: –

Comments: Total 4 larvae

Engrailed *Ectropis bistortata* (Goeze)

Low saplings (<6m tall): (c) 1, (d) 1, (k) 1

Low branches on tall trees: –

Trunk growth on tall trees: –

Tree canopy: –

Comments: Total 3 larvae

Dotted Border *Agriopsis marginaria* (Fab.)

Low saplings (<6m tall): (p) 1, (8) 1

Low branches on tall trees: –

Trunk growth on tall trees: (m) 1

Tree canopy: –

Comments: Total 3 larvae

Pale Brindled Beauty *Apocheima pilosaria* (D.&S.)

Low saplings (<6m tall): (i) 1, (6) 1
Low branches on tall trees: –
Trunk growth on tall trees: –
Tree canopy: –
Comments: Total 2 larvae

Scalloped Oak *Crocallis elinguaria* (L.)

Low saplings (<6m tall): (d) 1
Low branches on tall trees: –
Trunk growth on tall trees: –
Tree canopy: –
Comments: Total 1 larva

November Moth *Epirrita dilutata* (D.&S.)

Low saplings (<6m tall): –
Low branches on tall trees: –
Trunk growth on tall trees: (m) 1
Tree canopy: –
Comments: Total 1 larva

August Thorn *Ennomos quercinaria* (Hufn.)

Low saplings (<6m tall): (6) 1
Low branches on tall trees: –
Trunk growth on tall trees: –
Tree canopy: –
Comments: Total 1 larva (reared to adult by PW)

Twin-spotted Quaker *Orthosia munda* (D.&S.)

Low saplings (<6m tall): (f) 1
Low branches on tall trees: –
Trunk growth on tall trees: –
Tree canopy: –
Comments: Total 1 larva

Small Quaker *Orthosia cruda* (D.&S.)

Low saplings (<6m tall): –
Low branches on tall trees: –
Trunk growth on tall trees: (5) 1
Tree canopy: –
Comments: Total 1 larva

Yellowtail *Euproctis similis* (Fues.)

Low saplings (<6m tall): (e) 1
Low branches on tall trees: –
Trunk growth on tall trees: –
Tree canopy: –
Comments: Total 1 larva

Comma *Polygonia c-album*(L.) larva

Low saplings (<6m tall): (8) 1
Low branches on tall trees: –
Trunk growth on tall trees: –
Tree canopy: –
Comments: Total 1 larva

The two Tables, used in conjunction, provide all the information for each species and each sample. A total of 85 macro-lepidopterous larvae of 17 species was recorded, including 17 individuals of the genus *Cosmia,* but none of the White-spotted Pinion. The positive records confirm which situations the various species breed in, but in most cases the densities of larvae are so low that it is not possible to be sure that there are real differences between the various situations. The Mottled Umber appears to be absent from low elm re-growth under an open sky and only to occur in situations under the tree canopy. However, in other places and dates, I have found larvae in more open situations. Another explanation might be that the greater warmth of the sun in the open enabled more rapid development and that larvae in the open had all pupated by the sampling dates. Both the larvae found on 5 June were in their final instar and would soon be pupating, but the larva on 22 May was only half-grown. The pleasant surprise find for me was the larva of the August Thorn. This is not a species I have encountered very often as a larva, and was my first from elm, which P. B. M. Allan (1949. Larval foodplants. Watkins & Doncaster. Hawkhurst,

1979 reprint) considered one of the main larval foodplants. The fact is, of course, that in recent years there has been much less elm to beat. I was not surprised to see the larva of the Comma butterfly, which I have found on low elm re-growth in sunny situations quite frequently – my surprise with this species in 2000 was finding a larva feeding on the leaves of the Gooseberry bushes in our garden, another foodplant well-known to Allan (*op. cit.*).

Table 2: Habitat features of the beating samples a – q and 1 – 9 grouped by species of Elm and type, height and situation of plant.

Wych Elm *Ulmus glabra* with rough large leaves (det. D. Evans)

Low saplings

6-7m tall (under open sky) – Samples: a,c,d,k, all beaten at 2m from ground

Hybrid between Small-leaved Elm *Ulmus minor* and Wych Elm *U. glabra*

Low saplings

4m tall (under open sky) – Samples: g,h,i,l,n,r,p,q,

8-9m tall (effectively forming their own light tree canopy) – Samples: e,f,6,7,8 all beaten at 4-5m from ground

Mature trees

Lower branches (under full canopy) – Samples: b,1,2,3,9 all beaten at 2m from ground

Epicormics/growth from trunk (under full canopy) – Samples: j (6-7m above ground), m,4,5 (4m above ground)

Tree canopy – Sample o (obtained by snipping off twigs onto a sheet with long clippers)

A third attempt to find larvae was made on 10 June by Barry Dickerson and David Evans, concentrating on collecting anything resembling the White-spotted Pinion, but without success.

As to why we found no larvae of the White-spotted Pinion in a wood where we recorded adults in both the previous summer and in August 2000, several reasons have been suggested. First, as 2000 proved not to be a particularly good year for numbers of the adult moth in August, there may well have been few larvae to find, perhaps because of the prolonged wet weather during the spring as mentioned. A second reason may be due to the fact that the larva conceals itself in a spun elm leaf by day, from which it emerges to feed in the evening and after dark. If it was very tightly or strongly wrapped, it might not be possible to dislodge it by beating and none would fall onto our beating trays. However, we had no trouble beating the two other *Cosmia* species which are more frequent in the wood, both of which spin in leaves. Also, one of the reasons for conducting the first beating session in the evening was to intercept larvae emerging from their shelters. A third reason could be that the larvae were in places we were unable to sample in any quantity, namely high up in the canopy or epicormic growth of mature trees. In 2001, we shall hope that the populations are larger and that we encounter some larvae amongst the various types of growth which can be reached from the ground. In this and other searches we need

to find ways of obtaining more samples from the higher parts of the trees and, as in 2000, it is worth repeating the operation on several dates over a 2-3 week period. For the record, I was the only member of our group (Huntingdonshire Moth & Butterfly Group) to find a larva of the White-spotted Pinion in 2000. This was in an elm shelterbelt, several trees deep, just over the county boundary in Cambridgeshire. It was found on 28 May 2000 by searching epicormic growth by hand for spun leaves. Only one larva was found, about 2.3 metres from the ground, in a site previously visited successfully on 14 May 2000 by John Chainey, who passed the details to me. Unfortunately, the larva was small and soon produced a parasitoid (Waring, 2001. *Ent. Rec.* **113**: 135-138), so I was unable to study its feeding behaviour and the ease of separating the larva from its spinning during the later instars. As expected, the larval spinning for the small larva is quite tight and protective. Even more unfortunately, all the moths we captured during the light-trapping were males or spent females and no eggs were obtained to enable larvae to be reared in different conditions to study their behaviour. We shall hope for better luck in 2001. The larva and the habitat in which it was found are illustrated in Waring (2001. *Ent. Rec.* **113**: 135-138).

Incidentally, John Chainey has had the same experience of failing to find larvae during searches in a site that subsequently produced reasonable numbers of the adult moth at light-traps. It is also apparent from our searches that there are many insects which spin up elm leaves; spinnings are numerous, but few are of *Cosmia* species.

I would like to thank all who joined me for the caterpillar hunts, and particularly David Evans for providing the ladder and conducting the beating at levels higher than the rest of us could reach from the ground. As regards light trapping for adults, Barry Dickerson and David Evans have done a commendable job investigating woodlands in Huntingdonshire for moths and latterly in taking a special interest in the White-spotted Pinion. The UK BAP project has provided an extra impetus and means for further work. The author thanks the Butterfly Conservation "Action For Threatened Moths Project" and English Nature for financial support for this work. There are many woods with elm still to be explored for this moth in Huntingdonshire and elsewhere and clearly much to learn about finding the larvae.– PAUL WARING, 1366 Lincoln Road, Werrington, Peterborough PE4 6LS.

Some notes and observations on the Small Eggar *Eriogaster lanestris* (L.) (Lep.: Lasiocampidae) in Somerset

The decline of the Small Eggar in England has been well documented. For example, Waring (1993. *British Wildlife* **5:** 53) gives a distribution map showing records from some fifty-seven 10-kilometre squares since 1980, compared with over 300 before that date. Skinner (1998. *The Colour Identification Guide to Moths of the British Isles*. Second edition, Harmondsworth) attributes its decline to the "wholesale destruction and indiscriminate trimming of hedgerows, combined with the pollution caused by motor vehicles and the drift from agricultural insecticides". Until about 12 years ago it was thought that the situation in Somerset mirrored the national scene.

At the early part of the 20th century, A. E. Hudd stated in the *Victoria County History of Somerset* (1906. page 95), “common in the larval state”, and Turner (1954. *The Lepidoptera of Somerset*) reported it “common and widespread”. At about that time, the species began a period of national decline so that by the time the Somerset Moth Group (SMG) was formed, in 1990, it had become very rare. At the national level, it was listed as “Endangered” (Shirt, D. B., 1987. *British Red Data Books: 2. Insects*. NCC). The status was reduced by Waring (1994. *National Moth Conservation Project News*. Bulletin 5) to Nationally Notable category B.

At the inaugural meeting of the SMG, the decision was taken to start the new recording period for Somerset Lepidoptera from 1980. During the first 11 years of this period (1980-1990) the group received only nine records of the species from the whole of the county. These were all of larval webs. However, in February 1989, and in the next two years, several males were attracted to m.v. light at North Cheriton (OS grid reference ST 6826). At the same time, a web of larvae was found on a hedge by a gardener at the neighbouring village of Bratton Seymour. Although the web was spun on hazel *Corylus avellana*, the larvae were feeding on an adjacent blackthorn *Prunus spinosa*. From this web I took six larvae to breed cabinet specimens, and three proved to be parasitised by the fly *Exorista fasciata* (Fallén) (Tachinidae). Encouraged by this flush of records, the SMG resolved to look especially for the species in the following season (1991). It proved to be a favourable one for the species in the county and a large number of webs was recorded; these included twelve on a single site near my home, which proved convenient to monitor twice daily.

The site was on the embankment of a road cutting, under construction for the Wincanton by-pass. Although blackthorn occurred on both sides of the cutting, only those on the south-facing aspect were used, where they received the maximum available sunshine. Each of thirty other webs recorded that year, and sixty recorded since, had the same southerly aspect.

Following communications with Paul Waring a “web recording form” was completed for each web. Webs first became conspicuous during the second week in May, until which time temperature, rainfall and sunshine had been average. From 22 May, the rainfall was well above average and temperature below normal, with night frosts. By 27 May it was apparent that larval mortality would be high. Larvae only came out of the webs to feed during warm sunshine (not during the night as is stated in some works) and so had not been able to feed adequately for two weeks. The number of larvae per web had ranged initially from 90 to 130 but, by the end of May, some webs had as few as four healthy larvae remaining. The webs became filled with frass, which under dry conditions poses no hazard to the occupants, but when wet, mould became rampant and larvae succumbed to the usual succession of mould, viral and bacterial diseases.

Because of these conditions it was decided, on 27 May, to take one complete web with 88 larvae into captivity. It was placed in an empty aquarium with a loose-fitting lid. The container was placed outside in the sunshine whenever possible and, with daily attention to hygiene, larvae continued to thrive so that 84 reached maturity and

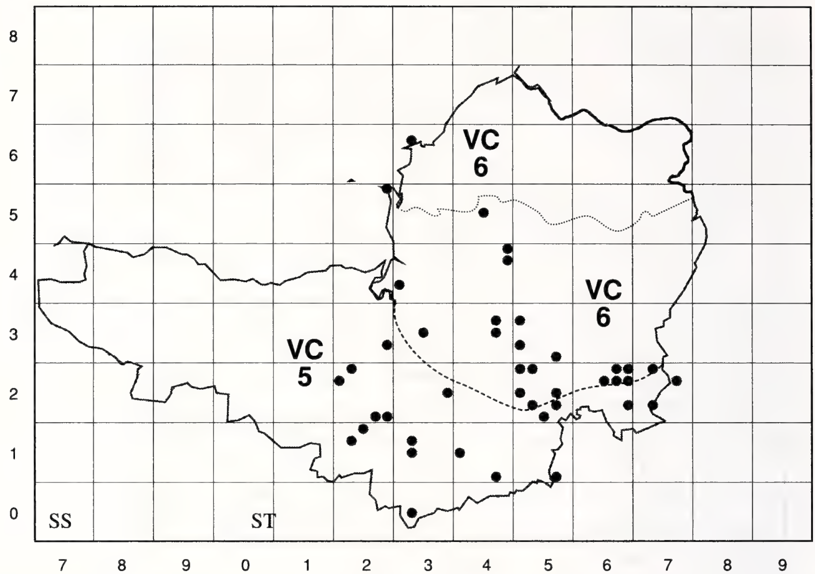

Figure 1. Distribution by tetrads (2 × 2km squares) of Small Eggar *Eriogaster lanestris* (L.) in the two Somerset vice-counties since 1980.

pupated in one large mass between 11 and 25 July 1991. From these, 54 adults emerged between 24 February and 16 March 1992, and a further 19 in the early spring of 1993 when the remaining pupae were returned to the original site.

It is interesting to make comparisons, with inherited wisdom, regarding this species. Barrett (1896. *The Lepidoptera of the British Islands*. **3**, 9-12) states that the eggs are laid on hawthorn or blackthorn, usually the former, whereas our experience in Somerset has shown 95% of webs are on blackthorn and 4% on hawthorn *Crataegus* spp., and the remainder on other hosts including elm *Ulmus* spp. and hazel; in 2001 one web was recorded on birch *Betula* sp. Barrett (*loc. cit.*), mentioned that the species is abundant in some years, but in other years, sometimes for several in succession, it can be very scarce. Experience over recent decades in Somerset confirms this pattern, but also raises questions as to its phenology.

Populations could be reduced by a succession of cold, wet springs, but could also fluctuate in a typical predator-prey cycle of the classical Lotka-Volterra type (Lotka, 1932. *J. Wash. Acad. Sci.* **22:** 461-469; Volterra, 1926. *Variations and fluctuations of the numbers of individuals in animal species living together*. Reprinted in 1931 *in* Chapman, R.N. *Animal Ecology*. New York), on account of attacks by the parasitic fly, or by a combination of the two.

I offer my thanks to my very good friends Dr David Agassiz (for his generous assistance in the compilation of this note), Dr John Bradley for reading and correcting same and Tony Parsons for going to so much trouble, firstly to extract the parasitoid

from its host and then subsequently to identify it. Also to Mark Yeates for being so much more computer-literate than I and for the MapMate mapping program used here.– KEITH BROWN, The Barn House, Cheriton Hill, North Cheriton, Templecombe, Somerset BA8 0AB.

Colonisation by *Cacyreus marshalli* (Butler) (Lep.: Lycaenidae) of a site in south-west France

The year 2000 promised to be something special here in the remote village of Graddé, when the usual five February butterflies here had been observed by the end of January (Peacock *Inachis io* (L.), Large Tortoiseshell *Nymphalis polychloros* (L.), Red Admiral *Vanessa atalanta* (L.), Speckled Wood *Pararge aegeria* aegeria (L.) and Brimstone *Gonepteryx rhamni* (L.)). Our house stands at the open end of a small valley, about three kilometres in length, with the ancient Forêt de Grésigne on one side and partially scrubbed garrigue hillside on the other. The valley floor is a small grassy plain, about 150 metres wide and with a small stream running along its length. The valley end opens out into vine-covered limestone hills.

On 24 April 2000, the Moroccan Orange-tip *Anthocharis belia euphenoides* (Stdgr.) put in an appearance – a new species for this area, although it is quite common further east. The year progressed with the same number of species as in earlier years – but in far greater numbers. In high summer, with temperatures around 30ºC, we had Long-tailed Blues *Lampides boeticus* (L.) appear on 15 August and it was whilst watching these on 19 August that I noticed a small, long-tailed butterfly, bronze-brown in colour and with a very noticeable chequered border. This was fairly rapidly identified as the Geranium Bronze *Cacyreus marshalli*.

In the following days, numbers of this butterfly increased rapidly and a voucher specimen was collected. Although the butterflies settled on most plants, they clearly were actively seeking out our potted *Geranium* and *Pelargonium* plants and, after a few weeks, we observed many small, green larvae on these plants. By now we had also seen the adults in quantity (40+) in the flower beds surrounding the car park at the Palais de Justice complex in Albi, about 30 kilometres from our garden, but by the middle of September they had disappeared. Adults re-appeared in the first week of October and remained in the garden in reasonable numbers (25+) until 25 October, suggesting that there was a second generation of adults one month after the arrival of the primary immigrants.

It was with some impatience that we awaited the 2001 season. On 12 August in that year, a week earlier than during 2000, we observed a few adults and again within a few days there were more (30+) in the garden. Adults were seen every day up to 9 September and then vanished until reappearance on 7 October, with the final sighting of the year on 3 November – giving some indication of the weather conditions that we experienced. Once again, a visit to Albi (the administrative centre of the Département du Tarn) showed the species to be present in the city centre – albeit at a different site; a small car park had the bush *Caryopteris clandonensis* planted around the borders and we were surprised to see over one hundred males and females covering the

flowers. Even the "passer-by" shoppers were stopping to watch this phenomenon. At our local large town of Gaillac (population 10,500) *C. marshalli* was seen at a garden centre; however, it has travelled up the valley from Graddé (population 10) where it is established on wild *Geranium* spp. in our meadow about one kilometre up the lane from the garden. The species is native to extreme southern Africa. It was recorded for the first time in Europe from Palma, Mallorca in November 1989 (Eitshberger & Stamer, 1990. *Atalanta* **21**: 101-108) and was assumed to be an establishment resulting from initial introduction. It was also noted on Mallorca [as Majorca] the next year, 1990 (Rayner, 1990. *Ent. Rec.* **102**: 250). The following year it was reported from Belgium (Troukens, 1991. *Phegea* **19**: 129-131). According to Leraut (1997. *Liste Systématique et Synonymique des Lépidoptères de France, Belgique et Corse* 2nd edition), after having been first seen on Mallorca it has spread to mainland Spain and Italy; unpublished records to support this statement exists on the Internet as a photograph taken in Rome by P. Mazzei during 1996, and another taken by A. Torry at Gerona, Catalonia [Spain] in 1997. The year 1997 also saw the first "wild caught" adult in Britain (at Lewes, East Sussex by John Holloway (*Atropos* number 4, 3-6) although it doubtless originated from an introduction of larvae on imported plants. Shaw (2001. *Ent. Rec.* **113**: 262) considered that his observation of the species in Corsica on 4 August 2001 appeared to be the first record of the butterfly there. White (1998. *Ent. Rec.* **110**: 297) records *C. marshalli* as new to Portugal from the Algarve in May 1998 and White (2000. *Ent. Rec.* **112**: 179) notes that the butterfly was present on Granada as early as 1995. Foster (2000. *Ent. Rec.* **112**: 271) records it as new to Lanzarote in 2000. The early spread in Europe is documented by Sarto I Monteys (1992. *J. Res. Lep.* **31**: 24-34), whilst a more accessible summary (to British readers) was given by Honey (1993. *Butt. Cons. News.* **53**: 18-19).

Larsen (2000. *Ent. Rec.* **112**:273-275) is of the opinion that the presence of the species in Spain and Southern France is the result of a "long range introduction", noting that it has even been found in Belgium and the UK, where it would probably be unable to survive on a permanent basis. Whilst migration from the extreme southern tip of Africa to Europe is unlikely, the evidence from Graddé and elsewhere may suggest that current waves are the result of phenomenal expansions of the new range of a species now established, and quite able to thrive on both wild and "domesticated" *Pelargonium* and *Geranium* species where available in conjunction with suitable climatic conditions.

However, the year 2002 will be a severe test. For the first time in ten years the winter temperature here has been maintained at a level below zero for a continuous month (lowest -12°C), although by the end of January 2002 we had, again, already seen the "February Five". We hope that the cycle will be completed again in August! – MICHAEL MARNEY, Graddé, 81140 Campagnac, France (E-mail: michael.marney@wanadoo.fr).

Gelechia cuneatella Douglas (Lep.: Gelechiidae), new to Lancashire

On the night of 29 July 2001, Mr Kevin McCabe came across a gelechiid moth with which he was unfamiliar in his m.v. trap in Flixton, Greater Manchester (VC 59). He kindly passed it on to me for closer examination. Having set the moth, which was

very worn, I realised I also had not come across the species before and therefore prepared a genitalia slide. The structure of the male genitalia clearly indicated it to be a *Gelechia* sp. of some description and further further checks in both *Microlepidoptera of Europe* Vol. 3 (Huemer and Karsholt, 1999) and *Die Palpenmotten (Lepidoptera, Gelechiidae) Mitteleuropas* (Elsner, Huemer and Tokár, 1999) led me to believe the moth was *Gelechia cuneatella.*

Information from *A review of the Scarce and Threatened ethmiine, stathmopodine and gelechiid moths of Great Britain* by Mark Parsons and a talk with Dr John Langmaid suggested the moth had not been recorded in Britain since the 1950s and never before in the western half of the UK. I therefore took the slide and moth to the BENHS Annual Exhibition where Dr David Agassiz offered to check the identification for me. This he kindly did and also suggested I contact a Danish authority, Keld Gregerson, on this family to find out more about the habits of the moth. Information received from Keld suggested a more recent record from Britain existed. Based on this information John Langmaid found a reference of two being reared in 1975 in North Essex by Peter Follett (Emmet, 1981. *The Smaller Moths of Essex*).

Attempts will be made, based on all the available information, to find the larvae of *G. cuneatella* and further information will be published if it becomes available. I am grateful to David Agassiz, Keld Gregersen and John Langmaid for their help with respect to this article and to Kevin McCabe for allowing me to publish details of his record.– STEPHEN PALMER, 137 Lightfoot Lane, Fulwood, Preston, Lancashire PR4 0AH (E-mail s.palmer12@btopenworld.com).

THE MOTHS OF ESSEX – APPEAL FOR RECORDS

Due to be published towards the end of this year, this book will summarise the status and distribution of all Essex moths for the fist time since the mid-1980s. It will include maps, flight-time graphs of common species, locally recorded larval foodplants and monochrome photographs of adults in natural resting posture. There is still time for extra records to be included. Could anyone holding records for either micro- or macrolepidoptera please contact me at the address below. A pre-publication offer (£16.50 plus post) for the book is included in this issue of the *Entomologist's Record*.– BRIAN GOODEY, 298 Ipswich Road, Colchester, Essex CO4 0ET (E-mail: brian.goodey@dial.pipex.com).

BOOK REVIEWS

British soldierflies and their allies by **Alan Stubbs and Martin Drake**. BENHS, 2001. 512 pp., 20 colour plates, numerous text drawings. 183 x 245 mm., hardbound. ISBN 1 899935 04 5. £30 (£20 for BENHS members), plus £4.40 p&p. Available from the British Entomological & Natural History Society at The Pelham Clinton Building, Dinton Pastures Country Park, Hurst, Reading RG10 0TH.

This important book has been long awaited by a great many British entomologists and the inevitable question is "was it worth the longer than expected wait?" The answer, unreservedly, is "yes".

The book is modelled very closely on the amazingly successful *British Hoverflies*, written by Alan Stubbs and illustrated by the paintings of Steve Falk in 1983. Keys to British species of flies in the families Acroceridae, Asilidae, Athericidae, Bombyliidae, Rhagionidae, Scenopinidae, Stratiomyidae, Tabanidae, Therevidae, Xylomyidae and Xylophagidae are presented in a clear, easy to follow format and are accompanied by drawings, placed adjacent to the key couplets, illustrating the points mentioned in the text. These keys have been thoroughly field tested for a number of years by several people, including both expert Dipterists and keen amateurs; a number of modifications to these test versions are incorporated into the published keys to render them just about as comprehensive and user-friendly as it is possible to be. I have tested the new keys on fifty species in my collection, including representatives from all the included families, and in every case the correct answer was arrived at rapidly and without any confusion or difficulty. A number of amateur entomologist friends were also asked to test the keys with specimens provided by me, and they all arrived at an identical overall conclusion. If there *are* any errors in these keys I have not found them yet!

The species accounts also follow the pattern established in the hoverfly book, providing further confirmatory characters for each species and comments on others which may appear similar, as well as outline notes on ecology and distribution.

However, there are a number of differences from and improvements over the hoverfly book. One difference is that colour photographs take the place of paintings. All that one really needs to know here is that the plates were all photographed by David Wilson: consequently, they are of the highest quality and clarity and will serve well to confirm or otherwise conclusions arrived at by using the keys and to identify all of those species for which a key is not really necessary. Improvements over the hoverfly book are dominated by the inclusion of keys to larvae (all families) and pupae (all except Stratiomyidae and Xylomyidae, which pupate within the larval skin and for which, therefore, the larval key is adequate). All chapters are furnished with a clear, concise introduction and there is a comprehensive list of references at the end of each family chapter.

I am sure that the authors would be surprised if I let them get away without any criticism at all – I have no intention of doing so! In their key to the (admittedly very difficult) females of genus *Thereva*, the very first couplet introduces a spurious character that might cause some problems to those who are new to keys. It asks us to believe that in one group of species tergites 1 to 7 have pale hairs "entirely so on tergites 1 to 6" (thus implying that tergite 7 is permitted to have some black hairs too), whilst in the other half of the couplet we are asked to believe that remaining species have some black hairs on tergite 7. Fortunately, it is made clear in part 2 that the black hairs also extend forwards to previous tergites, but I think that this discussion on tergite 7 would perhaps have been better placed as a confirmatory character in the text section. Couplet 1 could easily be re-written to ask "Tergite 6 with or without black hairs?", since that is all we really need to know.

On a more serious note, in my opinion the opportunity has been missed to place in the easily accessible English literature good, clear drawings of the genitalia of all species. Such drawings are presented for some, but not for others. Thus, for example, whilst the male genital apparatus of the species of *Sargus* are drawn (for some reason excepting *bipunctatus* though wisely including non-British species that might otherwise be overlooked), there are no such illustrations for the two species of *Chorisops*. This is unfortunate; although the yellow thoracic markings and the tergite pattern are easily visible in fresh specimens (and usually quite adequate to permit reliable separation), greasy specimens in collections cannot be named using this book alone.

In the days before the hoverfly book, those insects were regarded as "difficult". The book made them "easy" and popularised the group. As a direct result of the increased number of people looking at hoverflies, a dozen new species were added to the British fauna and the publication of comprehensive distribution maps was made possible. The book went through several reprints and even as I type this review certain sections are being re-written to take account of newly discovered British species or those which might perhaps be found here. I confidently predict that we are now embarking upon a similar journey for what have been referred to as the "larger Brachycera". Anyone with any interest in these attractive and fascinating insects will find this book invaluable. We now await, with eager anticipation, the work on craneflies which we all hope Alan will give to us fairly soon.

The bumblebees of Essex by **Ted Benton**. Lopinga Books, 2000. 180 pp., 16 pages of colour plates, numerous text drawings and distribution maps. 154 x 216 mm., hardbound. ISBN 0 9530362 4 3. £18.50. Available from Lopinga Books direct at Tye Green House, Wimbish, Essex CB10 2XE.

This attractively presented volume has been prepared by one of Britain's foremost authorities on bumblebees and contains rather more than just notes on the distribution of species in Essex – intrinsically interesting though that may be. A five-page introduction to bees is an important opening in that it does not foolishly assume knowledge on the part of the reader. This section is followed by six pages of discussion on the distribution and decline of bumblebees over the whole of Britain and this makes very informative reading. A further 16 pages follow on bumblebee natural history before introducing identification.

The book is valuable in its inclusion of entirely new identification keys (though, inevitably, some "old" characters are used). I find these keys rather easier to use to arrive at a correct answer than some of the existing published keys, though a degree of caution is required in their use since a few species judged never likely to appear in Essex are excluded.

The main meat of the book is the species accounts. Each bee is furnished with a comprehensive yet concise text, providing a brief summary of Essex distribution and status along with a description, notes on life history, identification, habitat and forage-sources. Notes are provided after this section on where to watch bumblebees in Essex, future research and conservation and, interestingly, a chapter on bee-mimics – including Essex distribution maps.

A glance at the recording coverage map, and the maps of very common species, suggests that a remarkably high level of geographical coverage has been achieved; set against this background some of the maps make frightening reading as it is realised just how rare some species have become.

This book is a comprehensive review of bumble bees in this south-eastern county of England and much of the information contained within will be directly applicable to many other areas – at least "south of Watford Gap". It is well worth putting on your bookshelf.

The Australian Stiletto-flies of the *Anabarrhynchus* Genus-group by **Leif Lyneborg**. Entomonograph 13 from Apollo Books, 2001. 256 pp., 672 line drawings, 240 x 170 mm. Hardbound, ISBN 87 88757 58 7. 420 Danish Kroner (£34.75 at 6 February 2002 exchange rate). A 10% discount is offered on the series (starting with the present volume) if ordered direct from the publisher at Kirkeby Sand 19, DK-5771 Stenstrup, Denmark.

It has to be confessed that this work will be of appeal to a limited few subscribers to this journal, and this is inevitably reflected in the brevity of this review – which is really more in the way of a free advert for the publishers. The book meets the expected high standards of quality in both content and presentation which Apollo is renowned for and is destined to become an essential reference for anyone working in this branch of entomology.

The butterflies of Pakistan by **Thomas Jones Roberts**. Oxford University Press, July 2001. 200 pp., hardbound, 290 x 217 mm. ISBN 0 19 577995 9. £9.95.

This work appears to be the first, as far as I can tell, dedicated to coverage of the butterflies of Pakistan, and some 317 of the 320 species in the checklist are described and illustrated with paintings executed by the author. Both upper and under surface patterns are depicted and where a species is sexually dimorphic both sexes are shown. Introductory chapters cover the basic introduction to butterflies and make the book accessible to the non-specialist amateur naturalist as well as the seasoned butterfly enthusiast. This basic theme of accessibility is carried through in the introductions to each of the butterfly families. There is a good list of literature referred to, a Gazetteer and a comprehensive index.

Initially, I considered the illustrations to be rather amateurish, if not inadequate, but on prolonged reflection (always a good idea when publicly appraising the work of another) it occurs to me that this is not at all the case. Whilst the paintings are, undoubtedly, of a lower standard than might be expected in a modern British butterfly work, they are in fact perfectly adequate in the context in which they appear.

I do have on major criticism, however, and that is the somewhat contrived application of English names to all the species. It is bad enough at home, but in somebody else's country it seems a tad ridiculous – perhaps even with a smack of the Empire in there somewhere? There are no Pakistani names evident; I wonder why we should need colloquial names in our own language when the indigenous population does not. Surely it cannot be the case that all Pakistani naturalists prefer to speak English?

The author of this book, who now lives on Anglesey, is a renowned conservationist and has three times received the World Wildlife Fund's International Award for Conservation Merit. He is also an accomplished field naturalist, having been awarded, in 1994, the *Sitara-e-Imtiaz* for his field research on mammals and birds. He is also the author of the Oxford University Press two-volume work on *The Birds of Pakistan*, the single volume tome *The Mammals of Pakistan* and is Editor of *Wild Flowers of Pakistan* and the mammals section of *Encyclopedia of Indian Natural History*.

The chances of me ever going butterfly hunting in Pakistan are remote, to say the least, but this book is, quite frankly, so ridiculously low in price for what you get that I would probably buy it anyway – just in case!

Continued from back cover

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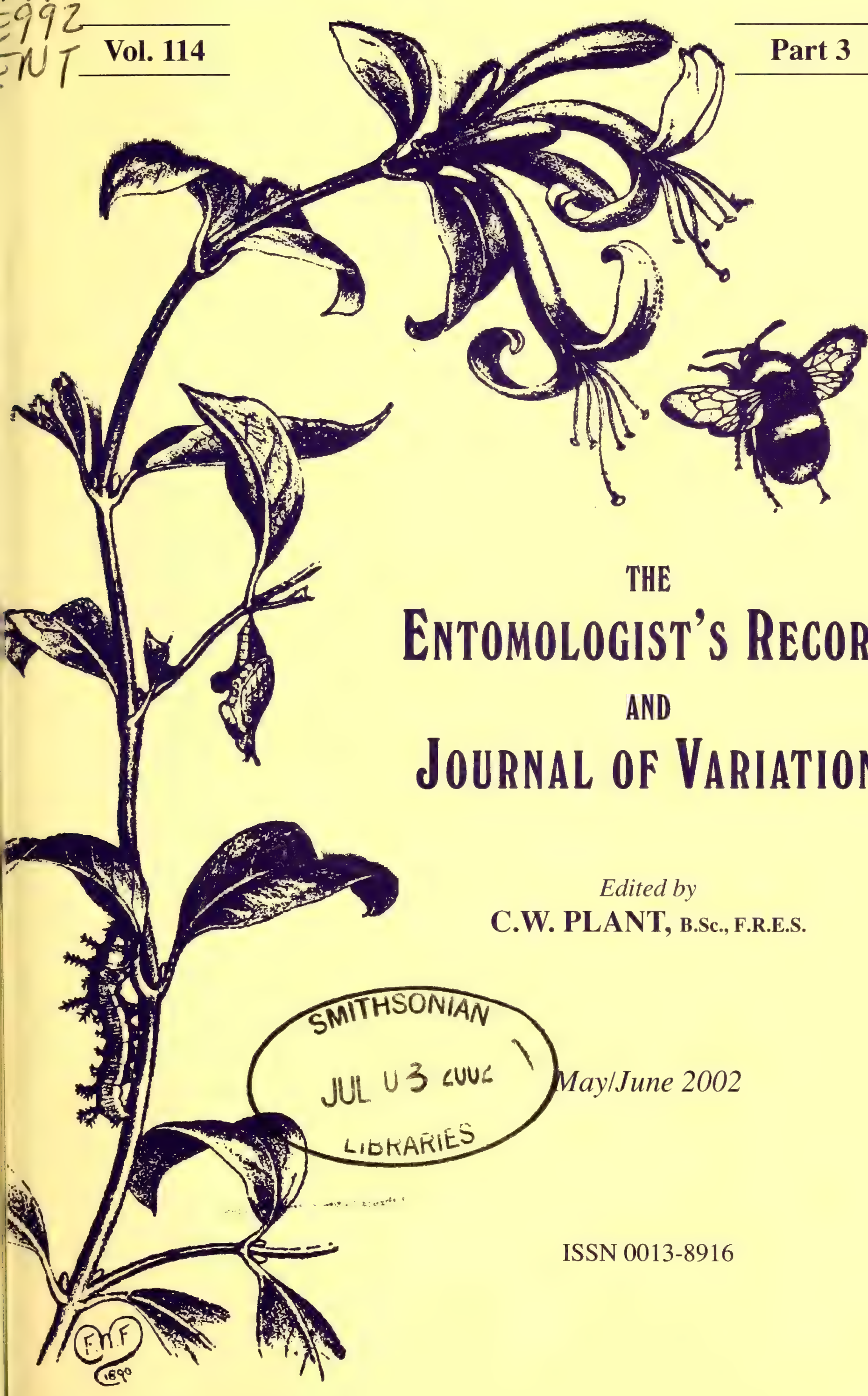

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A WEEK IN SERRA DA ESTRELA, PORTUGAL IN EARLY SEPTEMBER 2001, WITH ADDITIONAL LEPIDOPTERA SPECIES FOR THE PORTUGUESE FAUNA

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Abstract

Twenty-six species of Lepidoptera new to the Portuguese fauna are listed, preceded by a brief account of a week spent studying the Lepidoptera of the Serra da Estrela, Portugal, in September 2001.

Introduction

Although we had visited Portugal many times since 1989, my wife Alison and I had only visited the southern half of the country. For some time I had wanted to get into the more mountainous northern half. We arrived in Faro, in Algarve, on 30 August 2001, where we hired a car and stayed one night. The following morning we set off north after gathering up my own and borrowed collecting equipment. The next three nights were spent at Escusa in the Parque Natural da Serra de São Mamede near Portalegre in Alto Alentejo where I have been recording the Lepidoptera for the last six years. On 3 September we again headed north. Our route took us past Castelo Branco, Soalheira, Fundão and Serra da Guardunha, all places familiar to me from the literature as they were the hunting grounds of the great Portuguese lepidopterist Candido Mendes de Azevedo 100 years earlier. Under the scorching (35°C) late summer sun much of the area looked uninteresting, but it is clear from Mendes's records that this is not the case, or at least that it was not so a hundred years ago.

We arrived in mid-afternoon at Serra da Estrela, travelling up the valley of the Rio Zêzere to Manteigas from the east. Alison saw *Nymphalis antiopa* L. as we approached Manteigas. Serra da Estrela (*mountains of the star*) is a granite massif reaching a height of 1993m at Torre (*tower* – built to add the missing seven metres of altitude). These are the highest mountains in Portugal and the associated plateau is the largest area of high ground in the country. It also constitutes Portugal's largest natural park; the Parque Natural de Serra da Estrela is 55 km long and 25 km wide, with the longer axis running from south-west to north-east.

We were met at the Parque's office in Manteigas by Dr José Manuel Grosso-Silva, an all-round entomologist specialising in Coleoptera who had been surveying the insect fauna of the Parque Natural for the past three years, Pedro Pires an amateur lepidopterist from Coimbra with whom I had corresponded and his friend Fernando Romão. Fortunately all three spoke English, since our Portuguese is strictly limited. José's was excellent – he had done a British Council course to very good effect. Pedro's was not quite as good, but good enough to make puns in English using the scientific names of moths: she *comes* and she goes.

We were taken to the house belonging to the Parque where we were to stay for the week. We were on the upper floor of a house at Caldas de Manteigas close to the hot springs of Fonte Santa at 850m on the south side of the valley. The lower floor was occupied by a radio station co-ordinating forest fire fighting activities. This is manned by students over their summer vacation which coincides with the forest fire season. This was fortunate for us, since I managed to break our key almost as soon as we arrived. The students were able to let us in when we arrived back from moth-trapping in the early hours. Although spartan, conditions were quite adequate for our purposes, at least till the water supply failed towards the end of the week, which made cleaning up the house difficult on the day we left. The house is by the road running from Manteigas up the fine glacial valley of the Zêzere to the summit at Torre. It is just above a trout farm (*truticultura*) and below kennels where the local breed of sheep dogs are bred. Close to the house were plenty of well grown trees, predominantly sycamore *Acer pseudoplatanus* and narrow-leafed ash *Fraxinus angustifolia* with a few yews *Taxus baccata*, but many other species were present, many of them non-native species. 150 metres up the valley was an open slope with numerous streamlets and flushes and an abundance of green vegetation including the mint *Mentha suaveolens*, which is very attractive to butterflies. Later in the week, I walked through this area in the middle of the day. In half an hour I saw 17 species of butterfly, the most unusual being *Lycaena tityrus* (Poda), *Erynnis tages* (L.) and *Hesperia comma* (L.).

In the late afternoon we all drove up the valley of the Zêzere for about three kilometres. José had brought his girlfriend Patrícia, who had a leg in plaster. She remained near the cars while the rest of us walked up the valley floor for a little way along a path between tall brooms *Cytisus* sp. and small fields. *Agriphila deliella* (Hb.) flew up in numbers. It was getting late in the day for butterflies, but we did see *Satyrus actaea* (Esper) and *Brintesia circe* (Fabr.). A number of species of moth were recorded from wings we found on pools of water at or close to the edge of the river. Pedro and Fernando then returned home to Coimbra.

Back at the house, José and I set about finding a possible site to run an m.v. light. The only possibility was on a small flat area with a few weedy plants of *Mentha* and *Echium* below the house, down a steep flight of stone steps from the car park, adjacent to a storage area used by the owners of a stall by the trout farm and above a public convenience. The area was covered in litter from the car park above. I think I can fairly state that it was one of the most squalid sites in which I have ever run a moth light. Although it never produced large numbers of moths, over six nights it produced a surprisingly large number of species, including no less than eight species that had not previously been recorded in Portugal (new species for Portugal are marked with an * throughout this paper). Apart from the first night, when we stayed with the light from the time we returned from eating out, our practice was to take generators to a site somewhere in the Park, returning home some time after midnight, when the moths around the light were checked. In the morning I re-examined the catch and took the light in for the day. Some of the more notable species are as follows: 3-4 September: *Aristotelia decoratella* (Stdgr.), **Anacampsis*

populella (Clerck), *Caryocolum arenbergeri* Huemer, a previously known but undescribed species of *Bryotropha*, *Cosmia trapezina* (L.) (very few Portuguese records), *Atethmia algirica* (Culot), *Epilecta linogrisea* (D.& S.); 4-5 September: **Aroga velocella* (Zell.), *Catocala optata* (Godart), *Euplagia quadripunctaria* (Poda); 6-7 September: **Caryocolum proximum* (Haw.), **Eilema pseudocomplana* (Daniel), *Arctia caja* (L.) (very rare in Portugal); 7-8 September: **Eudemis profundana* (D.& S.), *Xanthorhoe ferrugata* (Clerck) (red form); 8-9 September: **Lozotaeniodes formosanus* (Geyer), **Acleris sparsana* (D.& S.), **Ecpyrrhorrhoe rubiginalis* (Hb.), *Merrifieldia tridactyla* (L.); 9-10 September: *Catoptria fulgidalis* (Hb.). Other regular visitors to the light were hornets *Vespa crabro* L., for which this is the only known site in the Park. They were not a problem, since they had become very quiet by the time we returned to the light. Only on the last night, when I had looked at the light and gone back into the house to sort the night's catch, I reached into my collecting bag for the lens I keep there and felt a sharp pain. I withdrew my hand, thinking I had pricked it on a thorn, but could find no projecting thorn, so I reached in again, this time with the other hand, for the lens in order to examine my hand for a small thorn. This time I again felt pricked and a hornet came out on my hand. A hornet sting (or two) was a "first" for me, but fortunately was no more troublesome than a wasp sting.

On the afternoon of 4 September, Alison and I explored the area around the summit at Torre and I found attractive ground for the night's trapping activities – around Covão do Boi at 1850 m, a little east of the summit in an area of gullies, boulders and heavily grazed patches of mountain pasture between granite tors and the spectacular towering Cântaro Magro. The vegetation consists of *Nardus stricta* dominating the grassy areas, a number of dwarf shrubs particularly among the boulders including *Juniperus communis* ssp. *alpina*, *Erica arborea*, *Echinospartum lusitanicum*, *Cytisus purgans* and *Genista anglica*. Patches of granite detritus and rock crevices had a number of the local specialities such as *Rumex suffruticosus*, *Minuartia recurva*, *Silene ciliata* and *Teucrium salviastrum*. In the afternoon the temperature was over 30°C, but at dusk when José and Patrícia joined us it fell rapidly to about 21°C, and as no moths appeared I feared that I had made a mistake trapping so high up so late in the year. In time moths did begin to appear and soon were present in numbers. After dark we were joined by another of my Portuguese correspondents, Ernestino Maravalhas, the most active lepidopterist in northern Portugal. About 65 species were recorded including **Xenolechia aethiops* (Humphreys & Westwood), *Teleiopsis bagriotella* (Duponchel), **Caryocolum mucronatellum* (Chrétien), *Eana nervana* (Joannis), *Symmoca serrata* Gozmány (endemic to Portugal), *Scotopteryx coelinaria* Graslin, **Charissa avilaria* (Reisser), *Gnophos obfuscatus* (D.& S.), *Hadena compta* (D.& S.), *Aporophyla haasi* Stdgr., *Polymixis xanthomista* (Hb.), *Calamia tridens* (Hufn.) and *Catocala nupta* (L.) (the first Portuguese record for about 70 years according to Ernestino). After packing up at about 01.00 hours, with the temperature having fallen little from when we began, we went back to Manteigas for refreshments in an all night café in town. Ernestino then left to drive the 250 kilometres to his home in Porto, as he had a report to write in the morning.

The following evening, by way of contrast, we set up lights by the River Mondego near Videmonte towards the eastern end of the Park, at 730 metres. We were informed this area had the most Mediterranean climate in the Park. In the valley were riverside trees and shrubs including alder (*Alnus glutinosa*), sallow (*Salix* sp.) and alder buckthorn *Frangula alnus*. On the slopes above were *Rubus*, *Cistus*, *Erica*, *Cytisus* and a few scrubby *Quercus ilex* ssp. *bullatus*. Three m.v. lights were used along with wine ropes. In one spot just above the river, the steepness of the slope made it impossible to use a light on a stand over a horizontal sheet, so a sheet was hung vertically, which was a technique I had not previously used. In total about 120 species were recorded. The wine ropes were not spectacularly successful but brought in *Catocala nupta* again, *Mormo maura* (L.) and *Xestia baja* (D.& S.). Lights produced **Parectopa ononidis* (Zell.), abundant *Argyresthia goedartella* (L.), *Coleophora alfacarensis* Baldizzone, *Epidola stigma* Stdgr., **Mirificarma lentiginosella* (Zeller), *Stomopteryx flavipalpella* Jäckh, *Dichomeris alacella* (Zeller), **Epinotia tenerana* (D.& S.), *Cydia coniferana* (Saxesen), *Acrobasis porphyrella* (Duponchel), *Drepana curvatula* (Borkhausen), *Idaea rubraria* Stdgr., **Eupithecia tenuiata* (Hb.), *Lymantria dispar* (L.), *Apaidia mesogona* (Godart) and mainly on the vertical sheet, abundant *Eilema caniola* (Hb.).

On 6 September, José and Patrícia took us to the western part of the Park. After lunch at Seia we went south through São Romão to the terraces of an abandoned forest nursery at Sazes da Beira. These were rich in butterflies including *Hipparchia alcyone* (D.& S.). Larvae of *Leucoptera lotella* (Stt.) and *Coleophora discordella* Zeller were found on *Lotus corniculatus*. On seedheads of *Achillea millefolium* there were numerous cases of **Coleophora argentula* (Stephens)

In the evening the Parque's biologist, José Paulo Pires took us up to the hilltop plateau south-west of Manteigas, where we were shown a seasonal lake, dry in September. We then set up lights at Alto do Espinheiro at about 1350 metres. This proved to be a rather disappointing spot, partly because the vegetation was not particularly interesting, but also because temperatures fell to much lower levels than on previous nights. The area appeared to be a frost hollow. About 32 species were recorded included *Paramesia gnomana* (Clerck), *Trichiura castiliana* (Spuler), *Chortodes pygmina* (Haw.), *Tholera decimalis* (Poda) and *Trigonophora jodea* (H.- S.).

On the evening of 7 September we were joined by Pedro Pires when we visited birch *Betula alba* and rowan *Sorbus aucuparia* woods at the head of the glacial valley of the Zêzere. These woods, near Albergaria at 1500 metres, face north to north-west and lose the late afternoon sunshine, allowing temperatures to drop quite low overnight. In the afternoon larvae of **Phyllonorycter sorbi* (Frey) were found mining *Sorbus*. By night about 47 species were recorded including **Ypsolopha scabrella* (L.), *Agonopterix nervosa* (Haw.), *Caryocolum fibigerium* Huemer, **Epinotia ramella* (L.), collected by Alison, *Chesias legatella* (D.& S.), *Enconista miniosaria* (Duponchel), *Agrochola haematidea* (Duponchel) and *Polymixis lichenea* (Hb.). It was interesting to see these autumnal species so early in the year, and it

brought home to me how much topography influences flight times. Further south in Portugal in warmer situations they would not be flying till November.

On 8 September, I saw *Cacyreus marshalli* Butler flying in the centre of Manteigas. This was not new for the Park, as it turned out that Pedro had seen it in Seia about an hour earlier!

That evening we went to Pyrenean oak *Quercus pyrenaica* woodland on the south-facing valley side above Manteigas at 1000 metres. Pedro joined us again, but was not able to stay on for the following night. About 120 species were recorded including *Ypsolopha lucella* (Fabr.), *Teleiodes huemeri* Nel, *Mirificarma cabezella* (Chrétien), *Notocelia incarnatana* (Hb.), *Pammene amygdalana* (Duponchel), *Crocallis dardoinaria* Donzel, *Euxoa cos* (Hb.), *Xestia castanea* (Esper), *Antitype chi* (L.) and *Luperina nickerlii* (Freyer).

The following afternoon, 9 September I revisited the valleyside above Manteigas. A bush of alder buckthorn *Frangula alnus* growing from a roadside ditch had several larvae of **Coleophora ahenella* Heinemann. Late in the afternoon there was a forest fire in the *Betula*/*Sorbus* woodland at the head of the valley less than a kilometre from where we had been working two nights earlier.

In the evening we went to the well-known waterfall at Poço do Inferno, south of Manteigas. At that time of year there was almost no water in the fall. Most of the area is heavily planted with trees, mainly species not native to the Serra such as beech *Fagus sylvatica* and sweet chestnut *Castanea sativa* and a number of conifers. There were also a few *Quercus pyrenaica*, *Alnus glutinosa*, *Salix* spp. and above the road and car park some *Betula* and *Sorbus*. Steep rocky banks were largely treeless with a mixture of grasses, *Dianthus lusitanus* and *Saxifraga fragosoi*. As on other nights wine ropes were used, but this was the first time in the week that the number of species attracted reached double figures. More notable species were *Menophra abruptaria* (Thunberg), *Peribatodes rhomboidarius* (D.& S.), *Selidosema taeniolarium* (Hb.), *Amphipyra pyramidea* (L.), **A. tetra* (Fabr.), *Polymixis dubia* (Duponchel), *Pseudenargia ulicis* (Stdgr.) and *Catocala nupta* again. About 96 species came to light including *Goidanichiana jourdheuillella* (Ragonot), *Batia lambdella* (Donovan), *Gladiovalva badidorsella* (Rebel), *Caryocolum schleichi* (Christoph), **Eana canescana* (Guenée), *Dioryctria sylvestrella* (Ratzeburg), **Phycitodes lacteella* (Rothschild), **Stenoptilia millieridactyla* (Bruand), *Macaria notata* (L.), *Glossotrophia rufomixtaria* Graslin, **Noctua tirrenica* Biebinger, Speidel & Hanigk and **Catocala fraxini* (L.). Driving through the woods on our journey home we had a glimpse of a small party of part-grown wild piglets *Sus scrofa* on the roadside.

We left the Serra at mid-day on 10 September. We drove up the valley past the area burnt the previous day and then over the high ground heading south to Covilhã, which lies at the foot of the southern edge of the Serra. The devastation caused by forest fires was nowhere more apparent than on this road. Hardly anywhere had escaped, and in some places houses had been severely damaged. Some fires had been recent, but the scars of fires in earlier years were still evident. Regeneration is very slow, perhaps due to heavy grazing. The fires are alleged to be started by

shepherds to improve the grazing; this seems the most likely explanation for fires in areas remote from roads. However, it seemed to me that there were more fires at the weekend than during the week, and that these were close to roads.

Before visiting Serra da Estrela, I had little idea of what we might expect to find. A trawl through the literature produced a list of about 110 species of moth. Candido Mendes (1913), who evidently visited the Serra on several occasions found very few species that could not be obtained elsewhere and considered the mountains disappointing, although he listed ten species that were found only at high altitudes. The reasons for his lack of success are not evident. It may be because he only visited the Zêzere valley in August. If he was only working by day, it is likely that he would have obtained little other than Crambinae. It is clear that he missed a great many species from the number we were able to add to the Portuguese list in just one week.

In total we recorded about 300 Lepidoptera species in Serra da Estrela during the week. A small number are still unnamed, particularly *Trifurcula* spp. and other Nepticulidae. A high proportion of this total (and most of the species recorded as new for Portugal) are widespread European species reaching their southern limit in the Iberian Peninsula in the Serra da Estrela and the nearby Sierra de Gredos in Spain. A lower number are widespread Mediterranean species, and fewer still are Iberian species. Perhaps the most notable of these are *Caryocolum arenbergeri* and *Charissa avilaria*, which were considered to be confined to the Sierra de Gredos. At least 26 species were added to the Portuguese Lepidoptera list.

Acknowledgements

I am grateful for all the friendly assistance we were given in Portugal, especially by José Manuel Grosso-Silva (who also provided useful comments on this paper) and the others mentioned above, to Fernando Matos, director of the Parque Natural da Serra de Estrela for the use of a house belonging to the Parque, to José Passos de Carvalho for the use of his equipment and his house in Algarve. My thanks are also extended to Peter Huemer for identification of *Caryocolum* species.

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Appendix.
Lepidoptera species added to the Portuguese fauna from Serra da Estrela.

All records except *Epinotia ramella* made by the author. Species marked + are known to occur elsewhere in Portugal, but the earlier record has not yet been published.

+*Stigmella trimaculella* (Haworth, 1828)
BEIRA ALTA: Manteigas, 9.9.2001, empty mines in *Populus*.

Parectopa ononidis (Zeller, 1839)
BEIRA ALTA: Rio Mondego near Videmonte, 5.9.2001

Phyllonorycter sorbi (Frey, 1855)
BEIRA ALTA: Albergaria, Vale do Zêzere, 7.9.2001, mines on *Sorbus aucuparia*.

Ypsolopha scabrella (Linnaeus, 1761)
BEIRA ALTA: Albergaria, Vale do Zêzere, 7.9.2001

Coleophora ahenella Heinemann, 1876
BEIRA ALTA: Carvalhais, N. of Manteigas, 8.9.2001, larvae on *Frangula alnus*.

Coleophora argentula (Stephens, 1834)
BEIRA ALTA: Sazes da Beira, 6.9.2001, larvae on *Achillea millefolium*.

Xenolechia aethiops (Humphreys & Westwood, 1845)
BEIRA ALTA: Covão do Boi, 4.9.2001

Mirificarma lentiginosella (Zeller, 1839)
BEIRA ALTA: Rio Mondego near Videmonte, 5.9.2001

Aroga velocella (Zeller, 1839)
BEIRA ALTA: Caldas de Manteigas, 4.9.2001

Caryocolum mucronatellum (Chrétien, 1900)
BEIRA ALTA: Covão do Boi, 4.9.2001

+*Caryocolum schleichi* (Christoph, 1872)
BEIRA ALTA: Poço do Inferno, 9.9.2001

Caryocolum proximum (Haworth, 1828)
BEIRA ALTA: Caldas de Manteigas, 6.9.2001

+*Caryocolum arenbergeri* Huemer, 1989
BEIRA ALTA: Caldas de Manteigas, 3.9.2001

+*Stomopteryx flavipalpella* Jäckh, 1959
BEIRA ALTA: Rio Mondego near Videmonte, 5.9.2001

Anacampsis populella (Clerck, 1759)
BEIRA ALTA: Caldas de Manteigas, 3.9.2001

Acleris sparsana (Denis & Schiffermüller, 1775)
BEIRA ALTA: Caldas de Manteigas, 8.9.2001

Eana canescana (Guenée, 1845)
BEIRA ALTA: Poço do Inferno, 9.9.2001

Lozotaeniodes formosanus (Geyer, 1830)
BEIRA ALTA: Caldas de Manteigas, 8.9.2001

Eudemis profundana (Denis & Schiffermüller, 1775)
BEIRA ALTA: Caldas de Manteigas, 7.9.2001

Epinotia tenerana (Denis & Schiffermüller, 1775)
BEIRA ALTA: Rio Mondego near Videmonte, 5.9.2001

Epinotia ramella (Linnaeus, 1758)
BEIRA ALTA: Albergaria, Vale do Zêzere, 7.9.2001, *leg.*A.S. Corley

Phycitodes lacteella (Rothschild, 1915)
BEIRA ALTA: Poço do Inferno, 9.9.2001

Ecpyrrhorrhoe rubiginalis (Hübner, 1796)
BEIRA ALTA: Caldas de Manteigas, 8.9.2001

Stenoptilia millieridactyla (Bruand, 1861)
BEIRA ALTA: Poço do Inferno, 9.9.2001

Charissa avilaria (Reisser, 1836)
BEIRA ALTA: Covão do Boi, 4.9.2001

Eupithecia tenuiata (Hübner, 1813)
BEIRA ALTA: Rio Mondego near Videmonte, 5.9.2001

Eilema pseudocomplana (Daniel, 1939)
BEIRA ALTA: Caldas de Manteigas, 6.9.2001

Catocala fraxini (Linnaeus, 1758)
BEIRA ALTA: Poço do Inferno, 9.9.2001

Amphipyra tetra (Fabricius, 1787)
BEIRA ALTA: Poço do Inferno, 9.9.2001

Noctua tirrenica Biebinger, Speidel & Hanigk, 1983
BEIRA ALTA: Poço do Inferno, 9.9.2001

Rearing the Fox Moth *Macrothylacia rubi* (L.) (Lep.: Lasiocampidae), an alternative strategy

I read with interest the account by Harry Eales (*antea*: 65-66) of his eventual successful overwintering and rearing of larvae of the Fox moth. At the risk of boring my friends in Yorkshire who have heard this story before, it may be of interest to recount the circumstances of my own success on the single attempt that I have made to rear this species.

On 28 May 1990, my friends Frank Botterill and John Newbould made an evening visit to Little Howden Moor, near Sheffield, during the course of which a female Fox moth was attracted to their m.v. light. It was temporarily enclosed in a jar by John and subsequently released at the end of the evening.

On the evening of 22 June the three of us met up to run m.v. lights at Anston Stones Wood, near Rotherham and during the evening as John took out a jar from his bag he noticed that there were some small larvae in the bottom. The explanation was evident, the female Fox moth had laid some ova in the jar and these had fairly recently hatched. Rather than have him tip out the survivors then and there, bearing in mind that there were no records of Fox moth at that site, I offered to take them home and attempt to rear them. I placed them, about a dozen in all, in a plastic fish tank covered with nylon stocking where they fed readily on the bramble *Rubus fruticosus* that I provided and grew quite quickly. Towards the end of September they appeared full grown and showed little interest in feeding so I placed several layers of newspaper in the bottom of the tank together with a couple of sprays of foodplant (just in case any were still hungry) and sited the tank in a sheltered position on the ground between a wooden boundary fence and my garden shed. I reared a large square of plywood against the fence, over the tank, to provide some protection against heavy rain. The larvae soon disappeared under the newspaper and I left them alone.

It was after a period of strong winds and heavy rain that, sometime during February 1991, I looked round the back of my shed and saw to my dismay that the plywood had been dislodged by the wind leaving the tank with no protection, consequently it was filled with rainwater to a depth of oven 15cms. I drained off the water and carefully parted the extremely soggy newspapers and was surprised to see apparently healthy larvae. In fact only two larvae seemed to have succumbed, whether this was as a result of their forced submersion it was impossible to say. The newspapers were so soggy that replacing them without unduly disturbing the larvae was impossible, so I drained off as much water as I could and returned the tank behind the shed and replaced the plywood. During sunny periods in the early spring I placed the tank in an open position and larvae were seen briefly before they pupated, most among the newspapers (now considerably drier!) but some in the corners of the tank. In due course all the moths emerged between 21 and 25 May 1991.

The moorland haunts of this moth, at least in northern England, are often extremely wet, especially during the winter months, and in the wild overwintering larvae will presumably often be at risk of inundation. That they cope well with these conditions is borne out by my larvae which may have been completely submerged for up to three or four weeks without suffering significant losses. Mr Eales utilisation of *Sphagnum* moss exposed to the elements together with my own experience suggests that it is beneficial to keep the larvae in wet conditions during overwintering, even though this would appear to fly in the face of conventional wisdom for keeping mould at bay.–H. E. BEAUMONT, 37 Melton Green, West Melton, Rotherham, South Yorkshire S63 6AA.

Moths: some recent records of advanced or extended flight periods and of bivoltinism

On 13 January 2002, a female December Moth *Poecilocampa populi* (L.) (Lasiocampidae) was captured in my m.v. trap at Garston, near Watford, Hertfordshire (VC 20). The flight period of this species is usually quoted as between October and December, but J. W. Tutt (1901-1905. *Practical Hints for the Field Lepidopterist* – reprinted 1994), states (Part I, p.6) that "late imagines of *P. populi* are still to be obtained at light, if mild, during the first fortnight of January". Plant (2001, *Ent. Rec.* **113**: 63-64) reports persistence until 6 January 2001 at a site in South Hampshire.

Plant (*op. cit.*) also collates a number of records of Spring Usher *Agriopis leucophaearia* (D. & S.) (Geometridae) during January 2001, involving a total of nine English vice-counties north to South-west Yorkshire. As Plant observes, most sources list the flight period for Spring Usher as mid-February to mid-March, although Barrett (1901, *Lepidoptera of the British Islands* **VII**: 242) adds "in very forward seasons at the end of January". Tutt (op. cit., Part II, p.1) reports that regular searching of park fences at Calcot (in Berkshire) in 1890 "produced fresh specimens of *Hybernia* (=*Agriopis*) *leucophaearia* abundantly from January 16th to March 6th"; the first date invites comparison with the recent records reviewed by Plant.

On 27 September 2001, single examples of *Orthopygia glaucinalis* (L.) (Pyralidae) and of Small Blood-vein *Scopula imitaria* (Hb.) (Geometridae) occurred in my Garston m.v. trap. Autumn records of both species appear to have become frequent in recent years, and are probably no longer reported by many lepidopterists. In an excellent article, B. K. West (1989. *Ent. Rec.* **102**: 109) draws attention to the recent increase in records of second brood Small Blood-vein and discusses discrepancies between statements concerning this phenomenon offered by modern and by older textbooks, pointing out that Barrett (1902, op. cit. **VIII**) states that a partial second brood of *S. imitaria* occurs in hot seasons in late August or September in very mild and sheltered districts. West suggests that, as the use of m.v. light was not available to the lepidopterist of the earlier era, *S. imitaria* was probably significantly commoner in the second generation in the nineteenth century than was the case through much of the twentieth century.

These last points are perhaps worth consideration in connection with the observations discussed earlier. It could be added that, prior to the recent interest in climatic change, the incentive to document unexpected dates of appearance in moths may have been less strongly felt than it currently is; such records might in the past have been more readily dismissed.

It goes without saying that none of the above in any way undermines the importance of reporting all dates that appear unusual.– C. M. EVERETT, The Lodge, Kytes Drive, Watford, Hertfordshire WD25 9NZ.

More reports of early insects

There have been several further reports of unseasonally early appearances of adult moths and other insects. The following have been received and are now placed on record:

LEPIDOPTERA

Gracillariidae

***Phyllonorycter messaniella* (Zell)** Friar's Grove, Colchester, North Essex (VC 19), 25 March 2002 (B. Goodey).

Pyralidae

***Pyrausta aurata* (Scop.)** – Eltisley, Cambridgeshire (VC 29). Warming up (just emerged?) on a stone in a herb garden at 11 am on 12 March 2002 (W. Kirby); Hertford, Hertfordshire (VC 20), one at light on 19 March 2002 (A. Wood).

***Aphomia sociella* (L.) – the Bee Moth**. Rickmansworth, Hertfordshire, (VC 20). 1♀ at m.v. light at around 21.00 hours on 2 April 2002 (P. Clack). The bulk of dated Hertfordshire records fall in July and August, with a few in June; until now the earliest had been 24 May 1989.

Geometridae

***Ligdia* adustata (D. & S.) – Scorched Carpet.** Wheathampstead, Hertfordshire (VC 20). A pristine example at a lit window, 5 April 2002 (T. Chapman). Of the dated Hertfordshire records, the previous earliest was on 24 May 1989.

Noctuidae

***Ochropleura plecta* (L.) – Flame Shoulder** – Layer de la Haye, North Essex (VC 19). One on 12 March 2002 (P. Pyke)

***Noctua janthe* (Borkh.) – Lesser Broad-bordered Yellow Underwing**. Cheshunt, Hertfordshire (VC 20). One emerged from a pupa in a garden on 21 March 2002, hung about on some three-corned leek for a long while, and then flew off, completely ignoring the Robinson trap that had been operating less than two metres away the whole time (M. & H. Cooper). This is a phenomenally early record – all other dated Hertfordshire examples are from July and August, extending up to 2 September.

***Lacanobia oleracea* (L.) – Bright-line Brown-eye.** Boreham, North Essex (VC 19). One at m.v. light, 24 March 2002 (G. Ekins). The previous earliest Essex record for this species was 2 April 1995 at Harlow (W. Last), but most Essex records are from May onwards (B. Goodey, pers. comm.).

***Orthosia cerasi* (Fabr.) – Common Quaker**. Walters Ash, Buckinghamshire (VC 24). One on 11 November 2001 (N. Fletcher).

***Cucullia verbasci* – Mullein**. Fernham, Berkshire (VC 22). One at 125w m.v. light, 24 March 2001 (S. Nash).

***Acronicta rumicis* – Knotgrass**. Bishops Stortford, Hertfordshire (VC 20). A freshly emerged male at m.v. light, 9 April 2002 (C. W. Plant). Dated Hertfordshire records extend from May to September, with one on 9 October in 2001; the previous earliest record of a first brood adult in the county was 19 May 2001.

***Colocasia coryli* (L.) – Nut-tree Tussock**. Boreham, North Essex (VC 19). One at mv light, 30 March 2002 (G. Ekins); Lemsford, Hertfordshire (VC 20). Two freshly emerged examples at m.v. light on 3 April 2002 (C. W. Plant). The previous earliest Hertfordshire record was 30 April 2001 and in most years the moth has appeared here in May.

COLEOPTERA

Cerambycidae

***Rhagium mordax* (Degeer)** Two at Oak Hill Farm, Theydon Bois, North Essex (VC 19) – one on 19 March and one on 27 March 2002, both during daytime on a sunny wall of a building (T. Green).

DIPTERA

Syrphidae

***Neoascia obliqua* Coe** Two males swept from amongst crowns of Butterbur *Petasites hybridus*, Lemsford Springs, Welwyn, Hertfordshire (VC 20), 3 April 2002 (C. W. Plant).

Further records of such out of season insects, in all Orders, are invited for future compilations. It will not escape the notice of the reader that all the records listed to date are from the south-east of the country. Is this truly a reflection of reality? – COLIN W. PLANT, 14 West Road, Bishops Stortford, Hertfordshire CM23 3QP (E-mail: Colinwlant@ntlworld.com).

Comments on supposedly earlier flight periods of spring moths

I suspect that the Editor would be disappointed were there no response to his request for comments on the reports of increasingly early records for the spring *Orthosia* species and indeed any other moths (*antea*: 66-68). The general assumption is that this trend reflects and thereby confirms the influence of global warming.

However, there are several problems with this interpretation. First, even if it is true that the very first individuals are emerging earlier, this does not necessarily imply that the median flight period of the brood as a whole has changed. Most individuals could still be emerging at their usual time. It is rash to predict the shape of the bell curve of emergence from a single point at its extreme beginning. Secondly, sampling errors can easily play a large part at the beginning of the curve. In years when the population is large, the bell curve will be higher and wider, so that the first individuals are out earlier. Also, the higher the numbers, the greater the chance of an observer catching one. By contrast, in a year when the population is low no individuals might be captured until nearer the peak of the flight period.

Thus, for convincing evidence that species are emerging earlier, we really need to compare graphs or histograms of the whole flight period over a series of years, rather than going merely by first or last dates.

It was brought home to me how misleading "first dates" can be during a sallowing session in Ashcombe Bottom near Lewes in East Sussex on 31.iii.1989. Nectaring on the golden catkins was a Scorched Carpet *Ligdia adustata,* making a delightful picture. Nor was it the only one that night, for I netted a couple more. The weather then turned cooler, and I did not see another until well into May. Did that make 1989 an early year for the Scorched Carpet? The main emergence was, if anything, slightly later than normal.

The occasional examples of the Common Quaker *Orthosia cerasi* that emerge in Autumn (Goodey, *antea*: 35; Hall, *antea*: 68) are surely a different case, but very interesting. If the habit became more frequent it might well lead to the rapid evolution of a new species, assuming the autumn and spring moths never had the opportunity to interbreed. There are some pairs of species which, we might surmise, arose in just such a way. Examples include the autumn-flying Scarce Umber *Agriopis aurantiaria* and its spring counterpart the Dotted Border *A. marginaria,* likewise The Streak *Chesias legatella* and the Broom-tip *C. rufata.* Alternatively, as the Common Quaker (like all *Orthosia* species) overwinters as a fully formed moth within the pupal case, perhaps the occasional autumn emergence is a relic of its ancestral habit and spring emergence the (relatively) recent development.– ROY LEVERTON, Whitewells, Ordiquhill, Cornhill, Banffshire AB45 2HS.

TYCHERUS NIGRIDENS (WESMAEL, 1845) (HYM.: ICHNEUMONIDAE) NEW TO BRITAIN

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Abstract

Tycherus nigridens (Wesmael) (Hym.: Ichneumonidae) is recorded as a British species from Yorkshire. The second and third British records of *Phaeogenes curator* (Thunberg) are also reported.

Introduction

I am indebted to Erich Diller of the Zoologische Staatssammlung in Munich for determining two female specimens of this *Tycherus nigridens* (Wesm.), which I had failed to identify in Perkins' RES key (Perkins, 1959). Their details are:

VC 62: Forge Valley, Scarborough (SE 9887) 5.9.1986, collected by W.A.Ely.

VC 63: Hartley Brook Dyke, Sheffield (SK 363931) 2.9.1987 collected by A.Brackenbury.

The genus *Phaeogenes* sensu Perkins has been divided since 1959 and *Tycherus* is one of the segregates. This species runs to couplet 14 in Perkins' key to *Phaeogenes*, but differs from the two options there (*heterogonus* and *curator*) principally on the structure of the hind coxae, which resemble Perkins' fig. 387. The basic colour scheme of the two Yorkshire specimens is similar to both these species but the anterior legs are red with the tarsi only slightly infuscated and the hind femora are red on the basal third and black on the apical two-thirds. The rest of the hind legs are coloured as in *heterogonus* and *curator* while the postannellus is shorter than the following flagellar segment (as in *curator* but more slender).

Perkins could only record one specimen of *Phaeogenes curator* (Thunberg) from Britain and I take this opportunity to place on record two others:

VC 63: Newsholme Dene, Keighley (SE04) 14.9.1948 collected by J.Wood (det W.A.Ely).

VC 63: Holmehouse Wood, Keighley (SE04) 5.10.1948 collected by J.Wood (det W.A.Ely).

Both specimens are in the Manchester Museum collections.

Acknowledgements

I am grateful to Dr Tereshkin of Belorussia for arranging the transfer of specimens to Munich and in particular to Erich Diller for their determination. I am also grateful to Austin Brackenbury for the many ichneumons he has collected to further our knowledge of the Yorkshire fauna, to Colin Johnson for allowing access to unidentified specimens in the Manchester Museum and to Mike Fitton for allowing access to the Natural History Museum collections to verify my determinations.

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Fox Moth *Macrothylacia rubi* (L.) (Lep.: Lasiocampidae) in Orkney

It was while out doing survey work on the hills at the south end of the Hoy, in the valley of the Burn of Ore that Tim Dean found a Fox Moth larva on 17 August 1999.

Hoy is an island that lies to the south-west of the mainland of Orkney. It is 16 km long by roughly 8 km wide, consisting of heather moorland from sea level to 479 metres, with a small area of agriculture in the northern-most corner and in the south-eastern corner.

Tim kept the larva and took it along for me to see. After discussion, it was decided that the larva would be left with me to see if I could take it through the winter. I read up on the subject and made some phone calls for more advice on how I should go about this. The outcome was that, though possible, it was not going to be straightforward to bring a Fox Moth larva through the winter. I settled for the cage in the garden as being my best bet. I dug a hole into which was positioned a bucket with a clump of Meadowsweet *Filipendula ulmaria* in it; there was also a small flower pot laid on its side with coarse, twiggy material in it for the larva to crawl into. The whole lot was then covered with net.

Initially, on being put in the cage the larva seemed to be doing all right, climbing up the vegetation during the day and feeding in full view. As the weeks went by it was seen less often, then not at all. After a few weeks of no sightings, I opened up the cage and all that could be seen where a few hairs. The cage was closed up, and left all winter, just in case, but no larva or moth appeared the following year.

Two years later on the 9 August 2001, while once more doing survey work, this time in the valley of Mill Burn three kilometres north of the first location, Tim found another Fox Moth larva; this one he left where he found it to get on with its life uninterrupted.

The Fox Moth is found in Sutherland and Caithness, and was one of the moths mentioned by Ian Lorimer in his book *Unfinished Business*. In the chapter titled "Lepidoptera Recorded From Sutherland and Caithness But Not From Orkney", he had drawn up a list of Lepidoptera that he felt, if not already here and not found at that time, could very well turn up some time in the future.

The discovery of the Fox moth on Hoy has left us with a small dilemma. In the past when people out on the Hoy Hills and saw a big brown moth go whizzing past it was assumed that it was a Northern Eggar *Lasiocampa quercus callunae*. That assumption can no longer be made, and at this time we do not know how widespread the Fox Moth is on Hoy.

As a means of determining how widespread the moth is, I have asked that when people are out on the hills and come across a Kestrel or Merlin plucking posts that they look for any wings which may be on the ground and check whether they were from a Fox or Northern Eggar. So far this has not yet borne any fruit.

It is be hoped that in years to come we can establish how widespread the Fox Moth is on Hoy through field trips to look for larvae.– SYDNEY GAULD, Quayberstone, St Ola, Orkney.

PTEROMALUS PUPARUM (L.) (HYM.: PTEROMALIDAE), A CHALCID NEW TO IRELAND

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Abstract

Pteromalus puparum (L.) (Pteromalidae) is recorded for the first time from Ireland.

Pteromalus puparum (L.) is a well-known primary parasitoid of the pupae of Lepidoptera, particularly Rhopalocera. In Europe, it most often attacks *Pieris* spp. and *Nymphalis* spp., but also parasitises *Papilio machaon* L., *Aglais urticae* (L.), *Vanessa cardui* (L.), *V. atalanta* (L.), other butterflies and moths. Species of Vespidae and Sphecidae (Hymenoptera) are also hosts. In addition, *P. puparum* is a hyperparasitoid of some Ichneumonoidea and chalcids. It is widely distributed, occurring in Asia, Australia, Europe, Madeira Islands, the Middle East, New Zealand, North and South Africa, North and South America (Graham, 1969; Noyes, 1998). In Britain, it is an abundant and widespread species, often troublesome in infesting captive breeding stocks of butterflies (Askew & Shaw, 1997). As a result, after preparing a catalogue of the Irish Chalcidoidea (O'Connor, Nash & Bouček, 2000), it was a surprise to discover that such an ubiquitous parasitoid was not recorded from Ireland.

Recently while sorting collections of miscellaneous and mostly unnamed insects in store-boxes in the Natural History Museum, Dublin, the author discovered numerous Irish specimens of *P. puparum*. The material was determined or its identity confirmed using Graham (1969), Bouček & Rasplus (1991), Askew & Shaw (1997). The records are as follows:

CORK: Roches Hotel, Glengarriff (V 9256), 29 July 1943, numerous ♂♂♀♀ emerged from pupae of *Vanessa atalanta*, J. E. Flynn; same locality, no date, numerous ♂♂♀♀ emerged from pupae of *Inachis io* (L.), J. E. Flynn.

DOWN: Warrenpoint (J 1418), 7 August 1928, 9♀♀ reared from *Aglais urticae*, labelled as *Pteromalus puparum*, W. F. Johnson.

Little seems to be known about Flynn and he is not mentioned by Praeger (1949). A hotel proprietor in Glengarriff, his main interest was birds and he discovered the first Irish firecrest (Flynn & Mitchell, 1944). Between 1929 and 1943 he was the author of nine entomological notes, mostly on migrant butterflies (Ryan, O'Connor & Beirne, 1984). He sent the reared specimens of *P. puparum* to the National Museum (NMI **9**: 1944). Despite being registered as Ichneumon flies, they were labelled as chalcids and stored loose in paper envelopes pinned in the corner of a store-box. By contrast, Rev. Johnson was a well-known Irish entomologist. He became one of the two most voluminous publishers on the insects of Ireland, working on many orders of insect (Beirne, 1985). After his death, the Museum

purchased his hymenopteran collection in 1934. Subsequently, his specimens of *P. puparum* must have been transferred from that collection into the box of miscellanea where they were found.

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An accidental introduction of a microlepidopteran to Berkshire?

For some time now I have been engaged in rearing species of bagworm moths (Lep.: Psychidae). One such species, *Dahlica triquetrella* (Hb.), was reared during 1997 and 1998 from material originating from Orpington, Kent (*Br. J. ent. nat. Hist* **12**: 29-30), adults of the F_1 generation emerging during February and March 1998. The known distribution of this insect in Great Britain is very restricted, being found in West Kent (VC 16), Westmoreland and North Lancashire (VC 69) and recently in South Essex (VC 18). Hence I was very surprised, and somewhat sceptical, to find cased larvae of this species ascending three short lengths of brick wall at the far end of my road here in Reading during the late summer of 2001. Positive identification of the species involved was achieved by analysing the DNA from one larva.

On 8 September, at 19.30 hours, I noticed the first of these larvae. Three further examples were found the following evening at 16.30 hours, and individual larvae on 10 September at 18.00 hours, 11 September at 18.30 hours and 12 September at 18.30 hours. Despite nightly checks being made, there then followed a break of around a week, which coincided with cool wet weather, until 20 September, when a further example was found on the same stretch of wall at 18.00 hours. The weather by this time was much warmer and drier, as it had been on previous occasions when larvae were found. The following night a further larva was found at 17.30 hours, followed by two more on 24 September at 21.00 hours. The weather turned cold and wet again, and it was not until it warmed up that more were found. One larva was found on 6 October at 17.00 hours, one on 9 October at 17.30 hours, one on 19 October at 19.00 hours, one on 22 October at 18.00 hours and the final one on 31 October at 21.00 hours. In total, 17 larvae were found over a period of approximately one month.

This number of larvae is significant and suggests that a population of *D. triquetrella* is probably established in the area. However, it is unlikely that these larvae represent a natural population, as I have walked past the walls in question many times over the past 14 years or so and feel sure I would have spotted them had they been present previously. I can only assume that these larvae, collected near my house, came to be there through an accidental introduction. It is probable that these individuals were the progeny of one or more "escapees" from the material reared during 1997 and 1998, despite stringent efforts to prevent this. These precautions included placing waste material from culture vessels in boiling water for 10 minutes or more before sealing the same in plastic bags and placing it in the dustbin on "bin days". All the same, it is somewhat puzzling that the walls in question are about 200 metres from my house, and no larvae have been seen on any other walls in the area despite extensive searches of these being made at the time these larvae were found. It will be interesting to see if this moth persists in the area over the coming years.– IAN SIMS, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

Lang's Short-tailed Blue *Leptotes pirithous* (L.) (Lep.: Lycaenidae) and other butterflies on Lanzarote

Further to recent records of *Leptotes pirithous* on Fuerteventura by Hall (1998, *Ent. Rec.* **110**: 289-290) and on Madeira by Hall and Russell (2001, *Ent. Rec.* **113**: 261), we report that *L. pirithous* was seen for the first time on Lanzarote at Playa Blanca, a single fresh female on 29 February 2000, by Martin Gascoigne-Pees, who visited Lanzarote between 25 February and 2 March 2000 and between 23 and 30 December 2001. David Hall and Peter Russell, who visited the island between 10 and 17 February 2002, observed this butterfly at both Playa Blanca, a worn male on 12 February, and also near Orzola at the opposite end of the island, two males on 14 February, flying around Mimosa *Acacia* sp., indicating that this species is now widespread, but not common on Lanzarote.

Foster (2000, *Ent. Rec.* **112**: 271) recorded *Cacyreus marshalli* (Butler) for the first time from the Canary Islands, on Lanzarote at Costa Teguise on 15 February 2000; it was also seen at Playa Blanca on 29 February 2002 and in 2002 at Matagorda (10 February), Playa Blanca and Femes (12 February), at two sites near Guatiza (13 February), near Orzola (14 February), near Arrieta and near Teguise (16 February). All stages of development were observed, indicating that this species is resident, common and widespread across the island almost wherever *Pelargonium* spp. are found.

Zizeeria knysna (Trimen) was confirmed as being resident on Lanzarote but was seen only at Playa Blanca in 2000, Las Laderas (near Playa Blanca) in 2001 and again along the coastal path at Playa Blanca in 2002. It was common and usually flying around an *Amaranthus* sp., upon which the females were observed to oviposit. Captive larvae accepted *Medicago sativa*, the resulting adult males had wide black wing margins and the females were well flushed with blue. *Polyommatus icarus* (Rottemberg) was seen near Tinajo and Mancha Blancha in late February 2000 but not on 11 February 2002 when the area was visited again. The females were extensively flushed blue on their uppersides with large bright orange lunules.

Lotus sp. was used for ovipositing, but the captive larvae accepted both *Medicago sativa* and the flowers of *Ulex europaeus* and were extremely cannibalistic (MG-P).The resulting imagines, reared in the UK, produced similarly marked females with many of the males having black marginal spotting on the upper hindwing, thus resembling f. *celina* (Austaut). *Lycaena phlaeas* (L.) was recorded from Playa Blanca in February 2000. Ova were laid in captivity on *Rumex lunaria*, but in the UK the females refused *R. acetosa* though continued to oviposit on dried up *R. lunaria*; the larvae, however, accepted both *R. acetosa* and *R obtusifolius*. This species was not seen in February 2002. The first confirmed record of *Danaus plexippus* (L.) on Lanzarote by Foster (*loc.cit.*) at Costa Teguise on 11 February 2000 was followed by a sighting of a male on 29 February 2000 at Playa Blanca, and a single specimen on 26 December 2001 at Yaiza flying around *Bougainvillea* by MG-P. In 2002, single examples were seen at Matagorda (12 February), Haria nectaring on Tamarind (*Leucaena leucocephala*) (13 February) and Arrieta (15 February); this indicates that, in spite of not observing either *Asclepias curassavica* or *Gomphocarpus fructicosa* (the most used larval foodplants), this species is probably resident but uncommon due to paucity of foodplant. Foster *(loc.cit.)* reports that *Carraluma burchardii*, which Owen (1992. *Ent. Gaz.* **43**: 87-92) reported as a foodplant for *D. chrysippus* (L.) on Fuerteventura, is found in the northern half of Lanzarote where two of the recorded sites are situated. We found the asclepidaceous scrambling plant *Peroploca laevigata* near Orzola and Guatiza, but found no sign of ova or larval feeding. This plant is present in Gomera, but we have never seen it used by *Danaus* species there either, although it is another possible fodplant. *Elphinstonia charlonia* (Donzel) was found very commonly, as well grown larvae, on *Reseda crystallina,* at 300-350 metres near Tinajo and Mancha Blancha in February 2000, where in calmer conditions on 1 March fresh second generation adults were flying. The first generation was very common at lower altitudes (sea level to 150 metres) in February 2002, when it was seen to be abundant near Matagorda and below Femes; additionally, it was seen in ones and twos almost all over the island when driving around from Playa Blanca in the south to Orzola in the north, and from west of Yaiza to Costa Teguise in the east. It was also seen in small numbers north of Caleta on the island of Graciosa in windy conditions on 15 February 2002. The first generation females were observed to use, preferentially, *Carrichtera annua* at the low altitudes; larvae resulting from ova taken from this plant, or laid on it in captivity, readily transferred onto *R. crystallina* and later onto *Eruca versicaria* and *Isatis tinctoria*, in all cases the leaves were preferred to the flowers or their buds. Two types of pupae resulted from wild larvae taken by MG-P: one was short, blunt headed and greenish in colour and emerged within two weeks; the other, in the majority, was very pointed, straw coloured and went into diapause, one male emerged in June 2001 and the remainder have, to date, not emerged despite regular spraying during the winter and artificially increased temperature and photoperiod in recent weeks. In February 2002, 13 ova were either collected from the wild (four) or obtained from caged females (nine), which oviposited on *C. annua* or *R. crystallina;* initially they were cream coloured but after about two days turned orange.

All hatched in approximately five days (at about 25°C) and ate the empty egg shells in their entirety. The larval stage lasted about 20 days, feeding on a mixture of *R. crystallina* and *E. versicaria* (at about 20°C). The resulting pupae were initially green in colour and transparent with pointed heads, but after about three days they had become straw coloured and opaque. Four later turned brown and appeared to have been parasitised by a tachinid fly. To date (14 March 2002), none of the remaining pupae have emerged and may well have entered diapause.

Colias crocea (Geoffroy) was observed occasionally in both 2000 and 2002, around Tinajo and near Teguise respectively.The two migrant Vanessids, *Vanessa cardui* (L.) and *V. atalanta* (L.) were seen occasionally. *V. cardui* was present in some numbers in gardens at Playa Blanca feeding on *Limonium* sp. in February 2000, but rarely seen in more than ones or twos in 2002. One specimen was seen on Graciosa, near Caleta on 15 February 2002. *V. atalanta* was not seen in 2000 but single specimens were recorded from Guatiza and Orzola, respectively, on 13 and 14 February 2002. A number of large *Cassia didymobotrya* bushes were noticed on arrival in Lanzarote, planted in the gardens at Arrecife airport. These were inspected closely on 17 February for any signs of the presence of *Catopsilia florella* (Fabricius) but the leaves showed no signs of having been chewed, no ova were seen and there was no sightings of the adults or other bushes of *C. didymobotrya* on the island. Thus, it would appear that this species, which had been reported from Lanzorote in 1976 (see Tolman and Lewington, 1997, Butterflies of Britain and Europe, Harper Collins p. 50) is not currently resident on the island. However, we have no doubt that sometime in the future a female from the African mainland (or Fuerteventura?) will find these plants and this island will be recolonised by *C. florella*.

On 29 February 2000 a small white Pierid was observed (MG-P) flying fast along the coastal path at Playa Blanca; unfortunately it evaded capture and thus was not identified with certainty. In spite of this it was probably a species not seen before on Lanzarote and thus it would be worth searching this area more thoroughly; a suggestion for other Entomologists wanting some winter sunshine in the future. — Martin Gascoigne-Pees, 2 Barretts Close Stonesfield, Oxfordshire OX8 8PW, David Hall, 5 Curborough Road Lichfield, Staffordshire WS13 7NG & Peter J.C. Russell, Oakmeadow Wessex Avenue East Wittering, West Sussex PO20 8NP.

White-spotted Pinion moth *Cosmia diffinis* (L.) (Lep.: Noctuidae): Results of searches for larvae in 2001

At one stage it appeared that access restrictions due to the Foot & Mouth disease epidemic would prevent further searches for larvae in May and June 2001, but fortunately these were lifted just in time to hunt for larvae in a couple of the key sites in Huntingdonshire before pupation. A programme of beating was carried out, as in 2000 (*antea*: 84-89), and again no White-spotted Pinion larvae were found. Searching by eye for the larval spinnings proved marginally more successful in that

one larva was discovered. The purpose of this note is to place on record the exact details of the breeding situation and the appearance of the spinning, to help others find and conserve this moth.

Plate F shows the larval spinning on the day it was found (6 June 2001), containing a final instar larva. The spinning consists of two flat overlapping elm leaves one spun on top of the other, the upper surface of one to the underside of the one above. These have been parted to reveal the larva, which was 3 cm in length. Note the series of small feeding holes made by the larva in both leaves on either side of spinning. The spinning was found amongst epicormic growth on the upper side of a bent-over trunk of English Elm *Ulmus procera* (Plate G), growing within a woodland compartment almost entirely of elm, and was 20 metres from the nearest ride. The spinning was in the highest point of the epicormic growth and was 2 metres above ground level and heavily shaded by the canopy. This breeding site was about 50 metres from the trap-site where we have recorded the adult moth on a regular basis and is in the centre of the wood. It is worth noting that this is quite a damp wood and at the time of the discovery the microclimate was distinctly humid, with an abundance of biting mosquitoes. There was lots of elm foliage at low levels, indicating that light penetrates the canopy. The ground cover was mainly Dog's Mercury *Mercurialis perennis*, with some Cleavers *Galium aparine* and Stinging Nettle *Urtica dioica*. The bent over stem was no more than 10 cm in diameter and could be grabbed with one hand. It was from the same rootstock as an adjacent larger vertical trunk, but this was only about 26 cm in diameter – neither could be described as mature trees.

The discovery of this caterpillar demonstrates that breeding is not confined to the tree canopy. The situation has some similarities to that in which the larva reported by Waring (2001. *Ent. Rec.* **113**: 135-138) was found, but differs in two major ways – first in that it was deep in woodland rather than in a shelterbelt only a few trees deep and second in that this one was on English Elm. The larva found at Boxworth in 2000 was amongst elm leaves which were large, shiny and with an upper surface smooth to touch. The trees have since been confirmed as a form of the Small-leaved Elm *Ulmus minor minor*. This confirms that the White-spotted Pinion will use both species in the wild.

Finally, as a guide to the stage in the season at which this final instar larva was found, larvae of the Winter moth *Operopthtera brumata* (L.) were largely over, but there were still a few Sprawler *Brachionycha sphinx* (Hufn.) about (at 4.5 cm in length), a full grown Lunar-spotted Pinion *Cosmia pyralina* (L.) was found on the same day and Dunbar *Cosmia trapezina* (L.) and Common Quaker *O. cerasi* (Fabr.) were frequent and between 2-4 cm in length. I hope these tips lead to further discoveries of the larva in other sites in 2002.

I am grateful to David Evans, Tree Officer for Cambridgeshire, who identified the elm trees. The work was conducted as part of the Butterfly Conservation Action for Threatened Moths Project with funding from English Nature as a contribution to the UK Biodiversity Action Plan.– PAUL WARING, 1366 Lincoln Road, Werrington, Peterborough PE4 6LS.

Plate F. Larva and spinning *C. diffinis*. Photograph © P. Waring

Plate G. *C. diffinis* breeding site. Photograph © P. Waring

Lymexylon navale (L.) (Col.: Lymexylidae) in Hertfordshire

Two females of this distinctive beetle were observed on recently-felled trunks of oak *Quercus robur* near Shenley, Hertfordshire (VC 20) on 31 July 2001. One of the females was watched ovipositing in an almost imperceptible fissure in the exposed heartwood at the base of one of the felled trees. Also present on these trees were the Brown Tree Ant *Lasius brunneus* (Latr.), common in this part of Hertfordshire (*Ent. Rec.* **112**: 84; and P. Attewell, pers. comm.), and a rather late adult of the buprestid *Agrilus pannonicus* (Pill. & Mitt.).

There appears to be but one previous record of *L. navale* for Hertfordshire, from Hatfield (some eight kilometres from Shenley) in 1963 (T. James, pers. comm.). Shenley is in the south of Hertfordshire, near Borehamwood, and thus also falls within the "London Area" (the recording circle of the London Natural History Society), in which the species is known from Richmond Park (e.g. *British Wildlife* **11**: 109) and Ashtead Common (Owen, 2000, *Ent. Gaz.* **51**: 239-248), both in Surrey. Allen (1966, *Ent. Rec.* **78**: 79-80) lists Windsor Forest (Berkshire), the New Forest and Portsmouth (Hampshire), Dunham Park (Cheshire) and Stretford (Lancashire) as localities then known, to which have been added Moccas Park (Herefordshire) (Cooter, 1976, *Ent. Rec.* **88**: 319-320), Headley (Surrey) (Owen, 1993, *Entomologist* **112**: 141-160) and Shrubland Park (East Suffolk) (Nash, 2001, *Ent. Rec.* **113**: 26). This list of known sites may not be exhaustive.

Cooter (*op. cit.*) emphasises the difficulty of ascertaining the presence of this species even on well-worked sites, a point the same author later amplifies in *Ent. Mon. Mag.* **119**: 116, and Allen (*op. cit.*) stresses the static distribution and poor colonising powers of primary-forest relics such as *L. navale*. These points may need to be considered in the interpretation of records, including the present one. Nonetheless, the several recent reports represent a positive development in the conservation of this Vulnerable (Red Data Book category 2) species, in addition to showing the commendable growth of interest in saproxylic insects being displayed by entomologists.

I would like to thank T. J. James, A. A. Allen and especially Prof J. A. Owen for their helpful correspondence.– C. M. Everett, The Lodge, Kytes Drive, Watford, Hertfordshire WD25 9NZ.

Additional observations on the presence of _Leptotes pirithous_ (Linnaeus, 1767) (Lepidoptera: Lycaenidae) in Madeira Island, Portugal, with a record of the first confirmed host plant

The presence of *Leptotes pirithous* on Madeira was first recorded by Hall & Russell (2001. *Ent. Rec.* **113**: 261) during August 2001. It was observed flying between 20 and 1450 metres, and females were observed ovipositing on several different plants (*Phaseolus* sp., *Teline maderensis* and *Plumbago capensis*). Additional specimens

were collected by Wakeham-Dawson *et al.* (2002. *Ent. Gaz.* in press), during October 2001 in Funchal city and, for the first time, from neighbouring Porto Santo Island. On 29 November 2001, Ole Karsholt collected a male *Leptotes pirithous* at Lugarinho, Ponta do Sol some 20 km west of Funchal (40-45 m above sea-level) during a field trip with the first author.

On 26 October 2001, Celestina Brazão collected six larvae (three in their fourth-fifth instar and three in their second-third instar) that were feeding on *Tipuana tipu* (Benth.) O. Kuntze leaves at Caniço Para a Cidade, some seven kilometres east of Funchal. *Tipuana tipu* is a leguminous tree from the South American tropics that is commonly grown in Madeira as an urban ornamental and is the first confirmed *L. pirithous* host plant in Madeira. Of the six larvae collected, three died as a result of difficulties associated with maintaining cut *T. tipu* leaves in the laboratory. Of the three that survived, two pupated on 1 November 2001 and the imagines (a male and a female) ecloded on 9 November 2001. The third larva pupated on 5 November 2001 and the imago (a male) ecloded on 16 November 2001.

The fifth instar larva (Plate H, Figs 1 & 2) has a woodlouse-like (onisciform) appearance, which is characteristic of many other Lycaenidae. When seen from above, the flattened green body conceals the legs and head and is covered by very short whitish hairs that give the larva a velvety appearance. The pupa (Plate H, Fig. 3) is light-brown and mottled in some areas with tiny black dots. In the adult male, the upper surface colour of the wings is an iridescent light blue (Plate H, Fig. 6) and the underside pattern is mottled light grey with lighter grey, wavy lines. On the sub-margin of the under hind-wings, there are two small black dots. In the male, these are surrounded by silver and dark grey. There is a small, fine tail located between the dots and associated with vein CuA2. In the adult female, the upper surface of the wings is darker than in the male and the area of iridescent blue, although reduced to the discal area of the fore wings, is brighter than in the male (Plate H, Fig. 6). The under sides of the female wings are similar to those of the male (Plate H, Fig. 5), but have a darker grey background colour, are more strongly mottled with dark grey and have more prominent pale grey-white wavy lines. In comparison to the male, the sub-marginal black dots on the underside of the female hind-wings are surrounded by silver and yellow, rather than silver and grey, and are visible through the wings when viewed from the upper surface. The dots do not show through to such an extent in the male. The hind-wing tails appear to be slightly longer in the female than in the male. 6-13 October 2001. *Entomologist's Gaz.* (in press).– A. M. Franquinho Aguiar, Laboratório Agrícola da Madeira, Est. Eng. Abel Vieira, 9135-260, Camacha, Madeira, Portugal. E-mail: antonio.aguiar@srafp.pt – Andrew Wakeham-Dawson, International Commission on Zoological Nomenclature, c/o The Natural History Museum, Cromwell Road, London, SW7 5BD, Great Britain. E-mail: iczn@nhm.ac.uk – Celestina Brazão, Laboratório Agrícola da Madeira, Est. Eng. Abel Vieira, 9135-260, Camacha, Madeira, Portugal. E-mail: celestina.brazão@srafp.pt

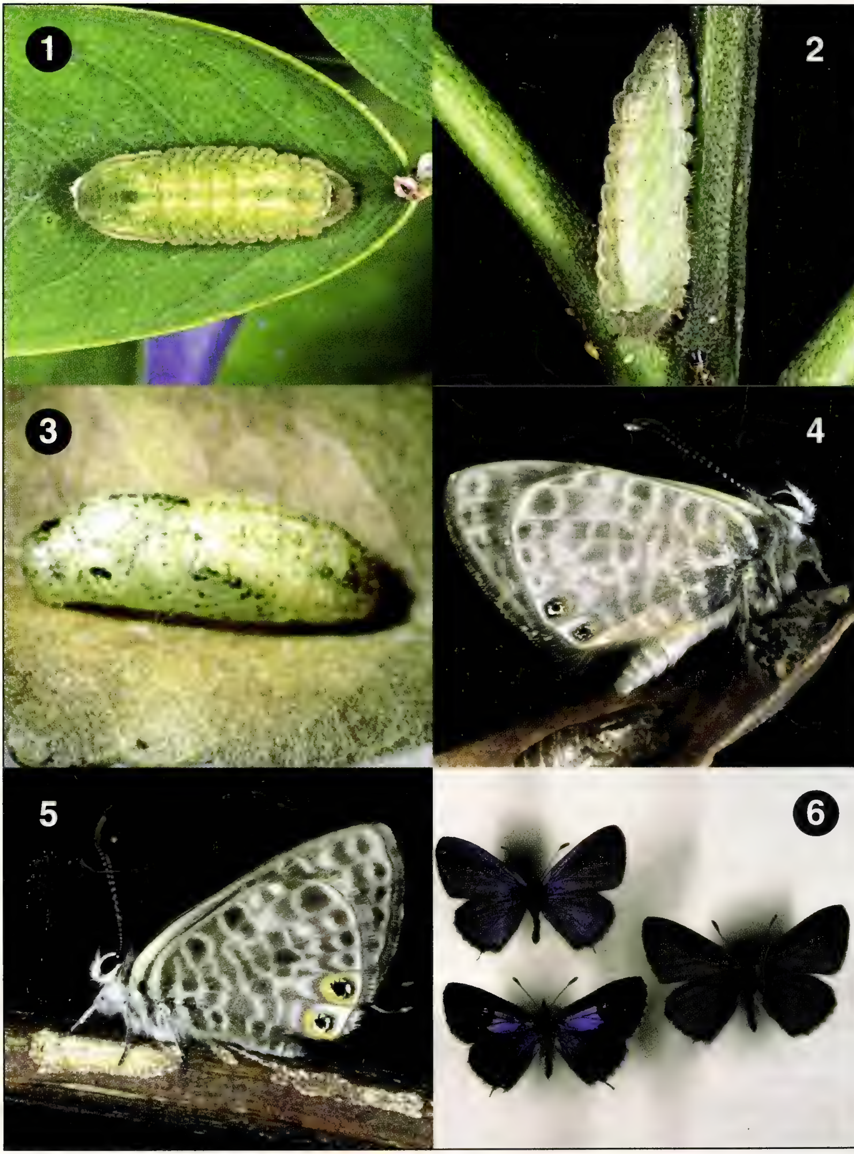

Plate H. The life stages of *Leptotes pirithous* (L.) in Madeira

1 – Fifth instar larva feeding on *Tipuana tipu* (Leguminosae), dorsal view; 2 – Fifth instar larva, lateral view; 3 – Pupa; 4 – Underside of male; 5 – Underside of female wings; 6 – Upper surface of wings – males in the upper left corner and right side, female in the lower left corner.

Reports of *Cheilomenes lunata* (Fab.) (Col.: Coccinellidae) in Britain – winter 2001-2002

At the beginning of January 2002, I received a ladybird from Keir Mottram. He had taken it from the coat of a guest arriving for a party in London (Middlesex, VC 21) on 26 December 2001. The beetle was large (6.5 mm) and distinctively patterned (Plate I). John Muggleton suggested that it might be the African species *Cheilomenes lunata*, and this was confirmed by reference to Iablokoff-Khnzorian (1982. *Les Coccinelles*. Boubée). Subsequently, five other findings were reported in Internet discussions as follows:

Hook, North Hampshire (VC 12), Paul Boswell;

Didcot, Oxfordshire (VC 23), Chris Raper;

Worcester, Worcestershire (VC 37), Harry Green, det. Mark Cox;

Perth, Perthshire (VC 88), Mark Simmons;

Sudbury, West Suffolk (VC 26), Lin Wenlock.

Plate I. *Cheilomenes lunata* (Fab.) Photograph © P. Mabbott

Additionally, specimens from Central Science Laboratory, York were determined at the BM(NH) (Roger Booth, *pers. comm.*); these were collected on 5 December 2001 from a consignment of 496 boxes of Cape Thompson seedless white grapes in Chepstow, Monmouthshire (VC 35) although the shipment entered the country via Sheerness, East Kent (VC 15). There were "high levels of beetles in the boxes" (Joe Ostoja-Starzewski, *pers. comm.*). Four of the other specimens were found in packets of Thompsons seedless grapes and there is circumstantial evidence that others might have come from a similar source. At least three retailers sold the grapes, one of which states that no ladybirds have been seen since December. The grapes were grown in the north-west region of South Africa over a wide area along the Orange River on the border of Namibia. The aphidophagous species is Afro-tropical in distribution but is found as far south as Cape Town. Sibling species have been employed in biological control but I have found no indications of *C. lunata* being so used. Only the Suffolk specimen, found during the first week of February, was dead. At least two remain alive, refrigerated, at the time of writing. My thanks to all the entomologists noted for records and advice.– PAUL MABBOTT, 49 Endowood Road, Sheffield S7 2LY.

Duponchelia fovealis Zell. (Lep.: Pyralidae) recorded in Somerset

On 27 December 2001, my son telephoned to inform me that his wife had found a pyralid moth, which he was unable to identify, in their house at Burnham-on-Sea, North Somerset (VC6). He described the moth to me over the telephone and, although I could not recall the name I was certain that I had seen it illustrated quite recently. The following morning I collected the specimen and my hunch was proved correct – it was a perfect male of *Duponchelia fovealis*. The insect was duly photographed and then set.

On 9 January 2002 another male example of this species emerged inside the house at Burnham, and this was duly sent to my other son in Cardiff. It is thought by us that the moths almost certainly originated with a foreign orchid plant that had arrived in the house as a Christmas gift. It had been purchased from a garden centre at Brent Knoll, North Somerset during December; enquiries have revealed that the centre imports the orchids from Holland, but that they may only be potted-up in that country, and so the primary source is unknown at this stage.

These two moths appear to represent the first records of *Duponchelia fovealis* for Somerset as a whole. Most British records of this species are probably related to imported plants, although there are records of wild-caught examples that may, perhaps, be primary immigrants (e.g., the Hertfordshire example taken by Colin Plant on 20 October 2001, given in *Ent. Rec.* **113**: 255-256).– B. E. SLADE, 40 Church House Road, Berrow, Somerset TA8 2NQ.

NOTES ON THE DISTRIBUTION, ECOLOGY AND CAPTIVE REARING OF *CRYPTOCEPHALUS DECEMMACULATUS* (L.) (COL.: CHRYSOMELIDAE)

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Abstract

Cryptocephalus decemmaculatus was one of the subjects of an English Nature funded PhD thesis on the conservation biology of the genus *Cryptocephalus*. This species is a Biodiversity Action Plan species and is currently listed as Vulnerable (*UK Red Data Book* category 2). Objectives of the Action Plan for this species are a better understanding of the beetles' ecology together with detailed distribution data. The UK distribution, rearing and autecological information presented in this paper are crucial in preserving the remaining UK populations of this species.

The beetle and it's past and present distribution

Nineteen *Cryptocephalus* species are found in Britain. Many of these species are of conservation concern (Hyman and Parsons, 1992). Adults of the genus are fully winged, thermophilic (Erber, 1988) and can be found perching on their respective host plants. The female beetle encases each egg she lays in faeces. The eggs are dropped onto the ground and once hatched the larvae adds to the egg case to form a larval case, which it carries around and retreats into at the first sign of danger. Larvae of all the species feed on leaf litter. *Cryptocephalus decemmaculatus* is a particularly enigmatic member of the genus (Plate J). Adults are found primarily on small *Salix* species, especially sallows, although specimens have also been found on small *Betula pubescens* trees.

The distribution of the species is unusual (Figure 1) with a small number of disjunct populations. The species is generally found in wet areas. Adults in the one remaining English population are found most frequently on sallows growing on a schwingmoor site. Only eight confirmed sites and one unconfirmed site (Fenns and Whixhall Moss) are known, with a small cluster in the north-west of England (Stott, 1929; Allen, 1960; Allen, 1970; Shirt, 1987; Hyman and Parsons, 1992). Three of the site records are based on single specimens and *C. decemmaculatus* has always been considered to be rare (Stott, 1929; Allen, 1970). Prior to 1981, the only known UK sites for this species were Chartley Moss in Staffordshire, where it had been known since 1879 (Stott, 1929), Burnt Woods in Staffordshire, a single specimen from Abbots Wood in East Sussex (Allen, 1970), Camghouran in Perthshire (Stott, 1929) and a single specimen from Braemar in Aberdeenshire (Allen, 1960). Records also exist for Chat Moss in Lancashire and the Muir of Dinnet (Aberdeenshire, 1986 Shell Survey). In 1981, a large population of this species was found at the Schwingmoor site and this colony has been the subject of intensive field and laboratory based studies for the last three years.

Plate J. *Cryptocephalus decemmaculatus* (L.) ♀ Photograph © R. W. Piper

Adults and larvae in captivity

1271 eggs were obtained from nine wild caught females during the summer of 2000. Adults were maintained in purpose built cages with a sprig of *Salix alba* that was inserted into a wetted core of florists foam ("Oasis"; Oasis, UK) fastened to the side of the container. Eggs were collected periodically and placed in purpose built boxes. Each of these boxes was part filled with plaster of Paris to buffer the humidity. The eggs were kept dry until hatching occurred. Moisture was then applied to one or two Oasis cores (1cm diameter) placed on glass cover slips in each of the larval boxes. First and second instar larvae spent a lot of time on these Oasis cores drinking the water. Later instars were less dependant on drinking. The larvae were fed fresh pieces of *Salix alba* leaves.

Sealing of the larval cases and subsequent pupation was induced by giving the larvae a simulated winter in progressively cooler incubators and decreasing artificial day length. Of the total number of eggs laid 728 (57.2%) hatched. A further 283 (22.3%) of the larvae died during their first instar. The majority (300) of the remaining larvae were used in experimental releases to investigate larval overwintering. 145 larvae remained in captivity and 23 (1.8 %) of these died before reaching maturity. A further 30 larvae (1.6%) reached maturity but did not pupate after diapause and carried on feeding. Of the 145 *Cryptocephalus decemmaculatus* larvae 78 adults hatched (53.8%) and 66.6% of the adults that hatched were male. Fourteen (9.7%) of the adults that pupated failed to hatch and 41.7% of these were deformed. Most of these deformed adults were male (85.7%). The only deformity observed was manifested in a twisting of one of the elytra. Of the unhatched adults, only two were female and one of these was deformed. 2.6% of the adults that hatched exhibited the same deformity that was seen in the unhatched adults and also displayed a paralysis of the metathoracic limbs and wings. The adults were individually marked on hatching enabling longevity to be recorded. In captivity the mean longevity for females was mean = 27 ± S.D. 3.9 days and mean = 18 ± 3.6 days for males. There was a significant difference in the median longevity of males and females [males (n = 40), 18 ± 4 days, median = 18 days; females (n = 18), 27 ± 4 days, median = 27 days; Mann-Whitney Z = -5.183, P = <0.001]. These captive adults produced more eggs and the larvae of these were fully grown by the autumn of 2001.

Searches for wild larvae

The English site for this species was searched for larvae in the summer of 2000. Moss and litter was sorted over a beating tray and seven larval cases were located. All of these cases were of fully-grown larvae, and all seemed to have been broken into. The Scottish site was visited in June 2000 and, using the same technique, six larvae were found. None of these were fully grown (≤3 mm) and all but one was alive.

During a visit to the English site in June 2001 a single live larva (3- 4 mm long) was found clinging to a *Salix cinerea* leaf at 1.3 m above the ground. Characteristic

feeding damage was evident on the leaf. It is impossible to determine if this larva had scaled the host plant or if an oviposited egg had some how found its way into a recess on the plant.

Table 1. The flight period of *Cryptocephalus decemmaculatus* in three areas within the English site.

Visit	Date	Adults Observed		
		Area A	Area B	Area C
1	08-May-00	0	0	0
2	09-May-00	0	0	0
3	10-May-00	0	0	0
4	22-May-00	28	0	5
5	24-May-00	32	0	8
6	01-Jun-00	36	48	16
7	02-Jun-00	36	52	18
8	03-Jun-00	40	60	19
9	11-Jun-00	54	83	21
10	15-Jun-00	46	99	22
11	16-Jun-00	33	58	31
12	17-Jun-00	33	54	42
13	24-Jun-00	24	43	29
14	04-Jul-00	20	37	27
15	05-Jul-00	18	11	21
16	12-Jul-00	14	4	15

Adult mortality in the wild

Dead beetles were found by visual searching of host plants and the ground at the English site. Spiders' webs were scrutinised in particular. Mortality of adults was apparently low. The only observed cause of mortality was capture in the webs of *Enoplognatha ovata* (Clerck). The spiders were observed feeding on the adults, which were trapped in the webs. Eighteen adults were observed in webs; 12 (66.12%) of these were male. One adult male was also observed being eaten by a crab spider of the genus *Xysticus* (Koch). The very low mortality observed in the adults may be a consequence of their black and yellow warning colouration. Many chrysomelids have been shown to produce chemical deterrents (Pasteels, Rowell-Rahier, Braekman and Daloze, 1984). Of these, many feed on *Salix* species (Tahvanainen, Julkunen-Titto and Kettunen, 1985).

Adult flight period

Three sub-populations exist at the English site and in areas A and C *Cryptocephalus decemmaculatus* adults emerged two weeks earlier (mid-May) than the adults in Area B (early June) (Table 1). The peak number of adults was observed at approximately the same time in all three areas (mid-June). Adults could be found until the beginning of August.

The distribution data in this paper highlights the need for surveys of historic localities, especially in Scotland. The beetle was relatively easy to rear from eggs through to adults. Many larvae could be maintained in a small space on leaf litter facilitating mass rearing for re-introductions. Wild larvae, although very cryptic, can be found by intensive searching beneath the host-plant giving an indication of development time, predation and micro-habitat preferences in the wild. Adult mortality appeared to be low, possibly due to the aposematic colouring of the imagines. Adults numbers are at their peak in the middle of June suggesting that surveys conducted during this time may have a greater chance of producing positive results, particularly in the north west of England.

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Records of the Pale Shining Brown *Polia bombycina* (Hufn.) (Lep.: Noctuidae) in Oxfordshire, Hampshire and Wiltshire in the 1970s and 1980s.

I thought it may be useful to record here my records of the Pale Shining Brown *Polia bombycina* from Oxfordshire, Hampshire and Wiltshire in the late 1970s and 1980s, in case they may help others to find this UK Biodiversity Action Plan Priority Species in that area or elsewhere in the next couple of seasons.

From 1976-1986 I operated a Robinson trap with a 125W MB/U mercury-vapour bulb several times a week at Park Farm, Kidlington, (O. S. grid reference SP 486144), except for large gaps from January 1981 to March 1983 when I was working in Africa. My records show that I recorded the moth at Park Farm in 1978, 1979, 1980, 1982 and 1984. The full details are:

1978: 26/27 June (1) (voucher specimen retained)

1979: 12/13 July (3), 18/19 July (1) (see below)

1980: 25/26 June (2), 1/2 July (3), 2/3 July (4)
(but no trapping 6 July 6 September)

1982: 8/9 July (1)
(but trapping only possible from 3 July to 4 September)

1984: 28/29 June (2)

A new housing estate was built on the open fields of cattle pasture immediately around our house and garden in the mid-1980s, in a series of phases. The fields had completely gone by the summer of 1986, although parts of the old hedgerows were retained in some places and are still there in 2002, as are many small fragments of grassland and scrub by the nearby canal and the railway line.

In 1983, I recorded the Pale Shining Brown on the night of 30 June/1 July (1) at Bentley Wood, at a trap-site in the Hampshire part (SU 263294). There were additional individuals at Bentley Wood on the nights of 4/5 July (1), 6/7 July (2), 10/11 July (3), 11/12 July (1), 13/14 July (1), 14-15 July (1) & 19/20 July (1), on the west side, in Wiltshire (SU 232280), on July 13/14 (1-3) and in nearby Farley village (SU 220294) on 15/16 July (1) (see also *Ent. Gaz.* **50**: 261-279). Recent records of the moth from Winterslow, including one trapped by Barry Fox on 21 June 2001 (see *British Wildlife* **12**: 435-437), indicate that the Pale Shining Brown is still present in the area at the time of writing. The building work immediately around our house at Park Farm may explain the lack of records of the moth there in 1985 and 1986 in spite of trapping several times per week and in 1987 I moved out of the area permanently. The Rushy Meadows SSSI (SP 482142), which was part of Park Farm, with its damp pasture and old hedgerows, is still intact by the canal and is currently being explored for moths by a series of field meetings of the British Entomological & Natural History Society. For a description of the site, and this project, see Waring & Townsend (2001. *Br. J. ent. nat. Hist.* **14**: 59-64). Thus far there has not

been a field meeting at the best time to record the moth; One is planned for 15 June 2002, meeting on site at 20.30 hours, to which all readers are welcome, though this will be at least a week too early for the Pale Shining Brown.

In 1979, I had the opportunity to run light-traps on a regular basis at five sites in Oxfordshire, namely Park Farm, Wytham Wood (SP 457084), Sydlings Copse nature reserve (SP 556094), Aston Rowant National Nature Reserve (SU 735976) and Bix Bottom nature reserve (SU 721878). I recorded the Pale Shining Brown at all but Bix Bottom. The full details are tabulated below:

Site	**Date**	**No.**	**Trap type**	**Trapping frequency at site**
Sydlings Copse	3/4 July 1979	1	Actinic	Weekly in July
Wytham Wood	5/6 July 1979	1	Robinson	3-4 times per week
Park Farm	12/13 July 1979	3	Robinson	Nightly
Park Farm	18/19 July 1979	1	Robinson	Nightly
Aston Rowant	13/14 July 1979	1	Robinson	5 and 13 July only

Table 1. Records of Pale Shining Brown from Oxfordshire.

Clearly, at that time the moth was widespread in the Oxford area, though probably local. The first half of July was the best time to trap it. The moth has undoubtedly declined nationally since the 1970s (see, *British Wildlife* **8**:188-190), but has it been lost completely from Oxfordshire?

The moth recording work at Wytham Wood was conducted with permission from the University of Oxford while I was an undergraduate there and was published in Waring (1980. *Ent. Rec.* **92**: 283-289) which includes descriptions of the trap-sites. The recording at Sydlings Copse and Bix Bottom was carried out with permission from the Berkshire, Buckinghamshire & Oxfordshire Wildlife Trust, and at Aston Rowant with permission from the Nature Conservancy Council (NCC). The NCC reserve staff kindly allowed me to sleep in their tool shed, which had hot and cold running water and a cooker! Full lists of all the moths I recorded were supplied to all the above and to the Oxfordshire Biological Records Centre at Woodstock Museum at the time.– PAUL WARING, 1366 Lincoln Road, Werrington, Peterborough, PE4 6LS (E-mail: paul_waring@btinternet.com).

Invasion of the Dotted Chestnuts *Conistra rubiginea* (D.& S.)

It seems worth placing on record the apparent first signs of a colonisation of the south-eastern corner of England by the Dotted Chestnut *Conistra rubiginea*. In his book *Larger Moths of Surrey* (1997), Graham Collins remarked that this moth was "... most regularly on the heaths of the Bagshot Beds, and less commonly on other heaths and woodland in central and south-western Surrey. Occasional examples appear further east and may represent attempts to increase the species' range". In my own book *Larger Moths of the London Area* (1993) I listed a few records in the Surrey portion of the metropolis, but noted none for the Kent, Essex, Hertfordshire or Buckinghamshire portions, and none at all for the entire of the Middlesex vice county. Recently however, the moth appears to have spread into all of these vice counties except for Middlesex. Records to hand are as follows:

West Kent (VC 16) Darenth Wood, one on 18 April 1997 (D. Rolfe) – apparently the first ever Kent record; Petts Wood, 29 April 1998 (1♀) and 11 March 1999 (1♀) (D. O'Keeffe); Shorne Country Park, one on 2 March 2002 (R. Kiddie); Sevenoaks, one on 4 March 2002 (K. Palmer); Bexley, one on 24 March 2002 (I. Brydon).

North Essex (VC 19): Great Dunmow, one on 12 March 2002 (D. Perry) – the first ever Essex record (there are no records for VC 18).

Hertfordshire (VC 20): Long Marston (Tring), one on 28 March 1998 (A. Bernard) – first ever Hertfordshire record; Lemsford Springs, Welwyn, 3 April 2002, a slightly worn gravid female (C. W. Plant).

Berkshire (VC 22): Pucketty Farm, Faringdon, one 22 March 2002 (M. V. Corley); Appleford, near Abingdon, one 22 March 2002 (R. Lewington).

Buckinghamshire (VC 24): Langley, near Slough, one 1991 (R. Hayward) – first county record for about a hundred years; Little Frieth, near Marlow, singletons 8 April 2000 and 3 April 2002 (A. Gudge); Radnage, near Stokenchurch, 16 October 2000 (A. M. George); Turville Heath, near Stokenchurch, 2 April 2002 (T. Harman).

There remain no Middlesex records – though since there are now records from all the surrounding counties it is surely inconceivable that the moth is not there also? Records from other county areas would be welcomed so that the spread of this species (if that is what it is) can be placed on record.

I am most grateful to the various county moth recorders for supplying me with information so that it could all be contained in a single Note: Brian Goodey (Essex), Martin Albertini (Buckinghamshire), David Agassiz, Ian Ferguson and Denis O'Keeffe (Kent) and to the original observers for permission to quote their records. –
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TYPES OF BALKAN BUTTERFLIES. I. TYPE MATERIAL AND TYPE LOCALITY OF *EREBIA ORIENTALIS* ELWES (LEP.: NYMPHALIDAE: SATYRINAE)

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Abstract

The type material of *Erebia orientalis* Elwes, 1901 (Nymphalidae) is discussed.

Introduction

The so called Bulgarian Ringlet was described in 1900 based on material collected in July 1899 by two of the first explorers of the Bulgarian butterfly fauna, Mary de la B. Nicholl and Henry John Elwes, during their expedition to the Rila Mountains (Elwes, 1900: 199). It was initially ranked as a subspecies of *Erebia epiphron* (Knoch, 1783) and treated as such (Warren, 1936: 113) until 1977 when Arnscheid & Roos (1977: 110) elevated its taxonomic status to species level. Subsequently Higgins & Riley (1984: 279) and D'Abrera (1990: 158) again associated it with *epiphron,* while Abadjiev (1993: 50), Tolman & Lewington (1997: 215) and Jaksic (1998: 14) treated it as a distinct species. *Erebia orientalis* is a polytypic species. In addition to the nominate *orientalis* from Rila another subspecies *infernalis* Varga, 1971 (type locality: Vihren: 2300-2400 m [UTM grid reference 34TGM02]) occurs in the nearest Pirin Mts. The colonies of the species occupying higher parts of Stara Planina also differ morphologically, subspecies *macrophthalma* Varga, 1999 (type locality: SW side of Botev Peak, (above Ray Chalet), 1700-1900 m" [UTM grid reference 35TLH23]). All three groups of populations are well separated geographically. The male genitalia of the nominate subspecies are illustrated by Warren (1936: Pl. 28: Fig. 277) and those of the Stara Planina populations by Abadjiev (1995: 134: Fig. 20) and Jaksic (1998: 94: Fig. 75: 6).

The main part of the species range lies inside the Bulgarian territory and the common name introduced by Tolman & Lewington (1997: 215) looked to be somewhat satisfactory (since it was considered to be a Bulgarian endemic), but very recently it was found also in Yugoslavia (Parker & Jaksic, 1996: 95, 96).

Type locality and type material

The exact position of the type locality in the Rila Mts was never mentioned by the author (cf Elwes, 1900: 199-200). Fortunately Nicholl's paper (Nicholl, 1900: 66-67), written like a diary, helped to clear this situation:

"On the 10th [July 1899]... we started for the Marica valley... Next day [11 July 1899]... we proceeded up the valley... till we reached the a beautiful open basin... This basin was decidedly moist, if not actually boggy... July 12th [1899] was... but we resolved stay where we were..."

Comparing the above citation with data label (lectotype labels below) and modern maps the exact locality should be fixed as Rila Mts: Maritsa Valley: 6000 ft [about 1969 m; just above the fusion of Tiha Maritsa and Prava Maritsa rivers] [UTM grid reference 34TGM17] (see Fig. 1).

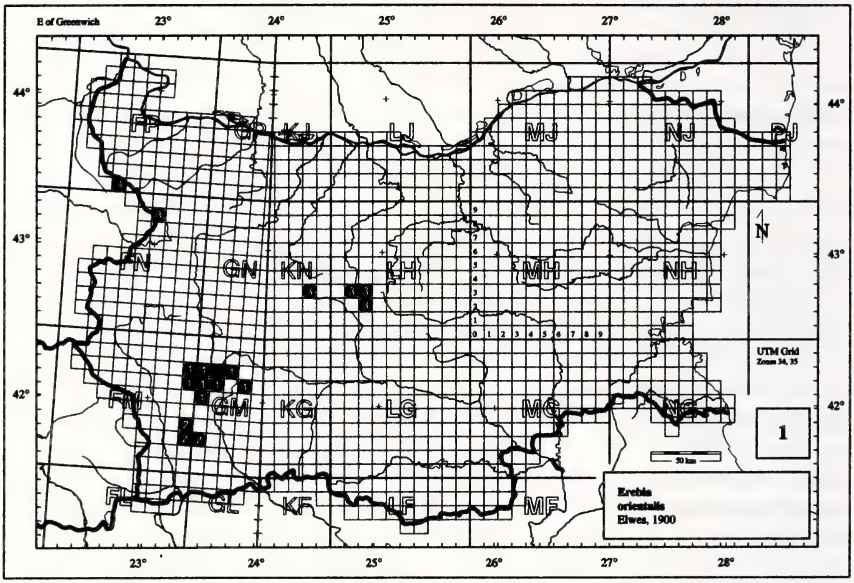

Figure 1. Map of Bulgaria showing the distribution and position of the type locality of *Erebia orientalis* Elwes, 1900: (1) ssp. *orientalis* Elwes; (2) ssp. *infernalis* Varga; (3) ssp. *macrophthalma* Varga.

A lectotype of *Erebia orientalis* was designated and illustrated in black and white by Warren (1936: 113, Pl. 68: Figs. 798, 799 [upperside], 806 [underside]). Later it was depicted in colour by Abadjiev (1995: Pl. XXXI: Figs 6-8).

— **Lectotype** ♀, with labels: (1) printed with handwritten inscriptions [here italicized] (on white paper) " Rilo Dagh, | S. W. Bulgaria. | *6000* ft. *12.7.99.* | H. J. Elwes."; (2) printed (on white paper) "Elwes Coll. | 1902-85"; (3) printed (on white paper) "Photographed | for B. C. S. Warren."; (4) printed (on white paper) "Illustrated in | Abadjiev, S. 1995 | Butterflies of Bulgaria | Vol. 3: Pl. XXXI: Figs 6-8"; (5) handwritten (on white paper) "orientalis, | Elw. Type ♀"; (6) circle printed (on white paper with red frame) "Type"; (7) circle printed (on white paper with blue frame) "Syn- | type"; (8) printed with handwritten inscriptions [here italicized] (on white paper) "B.M. TYPE | No.Rh. *6279* | *E. epiphron* | *orientalis,* | ♀ *Elwes.*"; (9) printed (on white paper) "SYNTYPE | Erebia epiphron | var. orientalis | Elwes. | det. P. Ackery, 1991."; (10) printed (on red paper), double framed "LECTOTYPE ♀ | Erebia orientalis Elwes, 1900 | Erebia epiphron, var. orientalis, | n. var. Elwes, H. J., 1900 | (On the Butterflies of Bulgaria. — | Trans. ent. Soc. London 48 (2): 199 | [line] | label attachment S. Abadjiev 2000"; in coll. The Natural History Museum, London.

— **Paralectotypes** 6 ♂♂, 3 ♀♀ with labels:

[1] (1) printed with handwritten inscriptions [here italicized] (on white paper) " Rilo Dagh, | S. W. Bulgaria. | *6*000 ft. *12.7.99.* | H. J. Elwes."; (2) printed (on white paper) "Elwes Coll. | 1902-85"; (3) printed (on white paper) "Illustrated in | Abadjiev, S. 1995 | Butterflies of Bulgaria | Vol. 3: Pl. XXXI: Figs 4, 5"; (4) handwritten (on white paper) "<u>orientalis</u>, | Elw. Type ♂"; (5) circle printed (on white paper with red frame) "Type"; (6) circle printed (on white paper with blue frame) "SYN- | TYPE"; (7) printed with handwritten inscriptions [here italicized] (on white paper) "B.M. TYPE | No.Rh. *6278* | *E. epiphron* | *orientalis,* | ♂ *Elwes.*";

[2] (1) printed with handwritten inscriptions [here italicized] (on white paper) " Rilo Dagh, | S. W. Bulgaria. | *6*000 ft. *12.7.99.* | H. J. Elwes."; (2) printed (on white paper) "Elwes Coll. | 1902-85"; (3) circle printed (on white paper with yellow frame) "Co- | type"; (4) circle printed (on white paper with blue frame) "SYN- | TYPE"; (5) printed with handwritten inscriptions [here italicized] (on white paper) "B.M. TYPE | No.Rh. *6280* | *E. epiphron* | *orientalis,* | ♂ *Elwes.*";

[3] (1) printed with handwritten inscriptions [here italicized] (on white paper) " Rilo Dagh, | S. W. Bulgaria. | *6*000 ft. *12.7.99.* | H. J. Elwes."; (2) printed (on white paper) "Elwes Coll. | 1902-85"; (3) printed (on white paper) "Photographed | for B. C. S. Warren."; (4) printed (on white paper) "Illustrated in | Abadjiev, S. 1995 | Butterflies of Bulgaria | Vol. 3: Pl. XXXI: Figs 1-3"; (5) circle printed (on white paper with yellow frame) "Co- | type"; (6) circle printed (on white paper with blue frame) "SYN- | TYPE"; (7) printed with handwritten inscriptions [here italicized] (on white paper) "B.M. TYPE | No.Rh. *6281* | *E. epiphron* | *orientalis,* | ♂ *Elwes*";

[4] (1) printed with handwritten inscriptions [here italicized] (on white paper) " Rilo Dagh, | S. W. Bulgaria. | *6*000 ft. *12.7.99.* | H. J. Elwes."; (2) printed (on white paper) "Elwes Coll. | 1902-85"; (3) circle printed (on white paper with yellow frame) "Co- | type"; (4) circle printed (on white paper with blue frame) "SYN- | TYPE"; (5) printed with handwritten inscriptions [here italicized] (on white paper) "B.M. TYPE | No.Rh. *6282* | *E. epiphron* | *orientalis,* | ♂ *Elwes*";

[5] (1) printed with handwritten inscriptions [here italicized] (on white paper) "Elwes Coll. | 1902-85 | *Rilo Dagh* | *6500* | *July 1900*"; (2) circle printed (on white paper with yellow frame) "Co- | type"; (3) circle printed (on white paper with blue frame) "SYN- | TYPE"; (4) printed with handwritten inscriptions [here italicized] (on white paper) "B.M. TYPE | No.Rh. *6283* | *E. epiphron* | *orientalis,* | ♂ *Elwes.*";

[6] (1) printed with handwritten inscriptions [here italicized] (on white paper) "*S W* Bulgaria. | M. de la B. Nicholl. | 1900-53 | *Ayrandere Valley.* | *7000 ft.*"; (2) circle printed (on white paper with yellow frame) "Co- | type"; (3) printed with handwritten inscriptions [here italicized] (on white paper) "B.M. TYPE | No.Rh. *6284* | *E. epiphron* | *orientalis,* | ♂ *Elwes.*";

[7] (1) printed with handwritten inscriptions [here italicized] (on white paper) " Rilo Dagh, | S. W. Bulgaria. | *6*000 ft. *12.7.99.* | H. J. Elwes."; (2) printed (on white paper) "Elwes Coll. | 1902-85"; (3) circle printed (on white paper with yellow frame) "Co- | type"; (4) circle printed (on white paper with blue frame) "SYN- | TYPE"; (5) printed with handwritten inscriptions [here italicized] (on white paper) "B.M. TYPE | No.Rh. *6285* | *E. epiphron* | *orientalis,* | ♀ *Elwes*";

[8] (1) printed with handwritten inscriptions [here italicized] (on white paper) " Rilo Dagh, I S. W. Bulgaria. I *6000* ft. *12.7.*99. I H. J. Elwes."; (2) printed (on white paper) "Elwes Coll. I 1902-85"; (3) printed (on white paper) "Illustrated in I Abadjiev, S. 1995 I Butterflies of Bulgaria I Vol. 3: Pl. XXXI: Figs 9, 10"; (4) circle printed (on white paper with yellow frame) "Co- I type"; (5) circle printed (on white paper with blue frame) "Syn- I type"; (6) printed with handwritten inscriptions [here italicized] (on white paper) "B.M. TYPE I No.Rh. *6286* I *E. epiphron* I *orientalis,* I *♀ Elwes*";

[9] (1) printed with handwritten inscriptions [here italicized] (on white paper) "Bulgaria. I M. de la B. Nicholl. I 1900-53 I *Marica.* I *6500 ft.* I *10:VI 99*" [The month in the date written here (10 June 1899) is apparently erroneous. It must be July. On 10 June 1899 Mrs Nicholl collected down in the valley of Rilska Reka (cf Nicholl, 1900: 33)]; (2) printed with handwritten inscriptions [here italicized] (on white paper) "Received as I *Erebia epiphron,* I *Knoch.* I from *Mrs Nicholl.,* I F. A. H."; (3) printed (on white paper) " ♀ " (4) circle printed (on white paper with yellow frame) "Co- I type"; (5) printed with handwritten inscriptions [here italicized] (on white paper) "B.M. TYPE I No.Rh. *6287* I *E. epiphron* I *orientalis,* I *♀ Elwes.*";

paralectotypes 1-5, 7 with printed (on white paper) "SYNTYPE I Erebia epiphron I var. orientalis I Elwes. I det. P. Ackery, 1991."; 6 and 9 with handwritten (on white paper) "Erebia rhodopensis I Nicholl? Original I description not I traced."; all the 9 paralectotypes with printed (on red paper), double framed "PARALECTOTYPE ♂ [♀ respectively] I Erebia orientalis Elwes, 1900 I Erebia epiphron, var. orientalis, I n. var. Elwes, H. J., 1900 I (On the Butterflies of Bulgaria. — I Trans. ent. Soc. London 48 (2): 199 I [line] I label attachment S. Abadjiev 2000"; and all in coll. The Natural History Museum, London.

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Hazards of butterfly collecting. "Boys'Own" scientists on the Musandam Peninsula – Oman, 1979

In 1979 I was asked to participate in a multidisciplinary scientific expedition to the Musandam Peninsula in Oman, at the time as remote and inaccessible as you could get it, under the auspices of the Oman Flora & Fauna Survey. The Musandam lies, so to speak on the "horn of Arabia", jutting out to create the narrow Straits of Hormuz, the strategically important entry point to the Arabian Gulf. Only one previous natural history expedition had visited the area, though a few individual scientists had managed to get there from time to time. Ken Guichard had brought back some butterflies three years earlier.

The Musandam was a small, dirt-poor territory which through the tortuous tribal politics of the region had decided to swear allegiance to the Sultan of Oman rather than to one of the neighbouring Emirates, now forming part of the United Arab Emirates (UAE). The Musandam is thus an enclave within the UAE, separated by 100 km from Oman proper. The landscape is one of jagged mountains with a few rugged valleys; the population eked out a living from raising livestock, plentiful dates, a few patches of flat ground where cereals could be cultivated, and three or four small coastal oases where vegetables could be grown.

Despite the serious nature of the trip, it turned out to be a bit of a "Boys Own" adventure story, starting on the very first day when we were to leave. We, and an amazing amount of kit, piled into an Air Force Shorts Skyvan – the plane that looks like the box it came in, but tough as old boots. We flew to Khasab, the tiny administrative capital, with a diminutive dirt runway that terminated in a sheer valley; you could land only from the North, and take-off only from the South, so wind conditions had to be pretty good. As we lumbered towards Khasab, well of the UAE coast, we noticed some light clouds over the Jabal Akdar, the green mountains that stretch from Oman to the UAE. Just before reaching Khasab, we were told to return to Muscat; a storm had suddenly blown up. As we reached land after skirting the UAE, conditions looked different from on the way up. We suddenly realized that

every wadi was in flash flood and that the main coastal road was cut in dozens of placed. We had difficulties getting through flooding to our Muscat base on arrival. Hundreds of cars were swept away and there were many deaths. So much for light clouds over distant mountains in Arabia.

The next day we did reach Khasab safely and settled into our research base, an almost finished building. We also took possession of our vehicle, a very old Land Rover, shorn of anything not needed for driving, including windshield. It was the first of many transports that we were to use, boots apart. Water in Khasab is unpleasantly brackish, so our first task was to take one of our Zodiac rubber boats down to the coast so that we could sail to a neighbouring oasis for sweet water.

Before breakfast the next morning we took a ride in an Air Force helicopter to establish the fact that we were allowed to use them, though we were only allowed to deviate them a bit from operational requirements. It put us down on a flat hilltop, barely large enough for the helicopter to land. On one side was a splendid view of the Khasab Oasis and our expedition HQ, on the other the rugged vastness of the sheer mountains that characterize the area. There was hardly space for us to move, but we made our first find. Just where the chopper had landed, a huge horned viper was soaking in the early morning sun. It was soon in a canvas bag. The chopper returned. A few minutes later we had a fine breakfast in the mess.

We explored the two main valleys in the Land Rover and on foot. We choppered into some promising localities in the morning and were picked up in the late afternoon. We had been issued with smoke bombs; they were so much fun that we tossed them even on days so pristine that it was clearly unnecessary.

Our collections mounted. Butterflies were, as was to be expected, few – just 30 species in all, so I had to find other things to do. In the afternoons I collected scorpions, and it was interesting to see how quickly you can form a search image as to whether a not rock was a suitable hiding place for a scorpion. At night I collected moths by light, one of which now bears the name *Mythimna larseni*.

Our last trip was to Goat Island, and here we used a landing craft of WWII vintage. Till recently this island had been teeming with goats which had devastated the landscape by eating down all but the hardiest bushes and trees. In the few days available we found little difference in species composition in our various specialities, but I am sure the quantitative mix must have been different from the mainland.

Back in Khasab our last trip was to a meeting with villagers in a village high up a steep mountain. The purpose was to try to establish if there was credible evidence that the Arabian leopard was still present. We sat through sweet tea, a maggot-infested mess of dates, and the necessary small-talk, then coming to the point. Three hours later it was clear that it was unclear whether or not the leopard was extinct (a recent scat was found the following year).

With the Iraq-Iran War, and especially the Gulf War of 1991, the Musandam's strategic importance increased and I have been told that Khasab has been completely transformed. I hope the Arabian leopard still hangs on somewhere.– TORBEN B. LARSEN, Bangladesh, World Bank, 1818 H. Street N.W., Washhington D.C., 20433, USA.

SOME BRITISH RECORDS OF *OLETHRODOTIS MODESTUS* (GRAVENHORST) (HYMENOPTERA: ICHNEUMONIDAE: CTENOPELMATINAE)

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Abstract

The historically uncertain status of the ichneumonid wasp *Olethrodotis modestus* (Gravenhorst) as a British insect is reviewed, confirmed British records are provided, and recognition features are outlined. (Hymenoptera, Ichneumonidae, Ctenopelmatinae.)

Introduction

The ctenopelmatine tribe Olethrodotini contains two genera, one Western and the other Eastern Palaearctic, each with a single described species (Townes, 1970; Yu & Horstmann, 1997). The Western Palaearctic species, *Olethrodotis modestus* (Gravenhorst), has appeared on the most recent two British check lists covering Hymenoptera (Fitton et al., 1978; Kloet & Hincks, 1945, as *Taschenbergia*), but it appears that this was on the strength of its inclusion in 19th century works on British insects (Stephens, 1835, as *Tryphon evolans* Gravenhorst, from "near London, and in Salop"; Curtis, 1837, three entries as *Mesoleptus modestus* Gravenhorst, *Phytodietus microtamius* Gravenhorst, and *Tryphon evolans*, but only the latter indicated as being supported by a specimen in his collection; Marshall, 1872, as *Perilissus modestus*), rather than as a result of 20th century publications recognising British specimens. In particular, Morley (1915) omitted it both from the "Catalogue of the British Ichneumonidae" (pp. 369-400) that concluded his exhaustive account of British Ichneumonidae, and his (1911) treatment of the relevant group, referring to it (1911: 146, as *Tryphon evolans*; and 1911: 253 as *Perilissus modestus* (= *Mesoleptus modestus*)) only obliquely and not in a British context. As there do not appear to be published records of it as a British insect since the early part of the 19th century, when the basis for recognising it was, to say the least, shaky (most of the nomenclature and probably supposed specimens having depended on the relatively undistinctive male sex), and because it is generally considered to be rather a rare insect, albeit widespread in Europe (Aubert, 2000: 63), it seems worth listing data from the specimens of *O. modestus* we have recently examined in the collections of the Natural History Museum (BMNH) and the National Museums of Scotland (NMS), not least to establish its firm right to a place on the British list. In fact, there are a surprising number of British specimens in these two depositories, listed below in chronological order of capture, with exact transcription of label data:

1 ♂: Desvgns. 68-52 [printed] / modestus Gr. [printed] / un-named by Claude Morley 27 specimens CM iv.1911. (BMNH). Though lacking locality data this is presumably British, and the third label makes it clear that Morley was unable to

recognise this species (at least from the male sex). The label was evidently affixed only to the first specimen in a row of 27 and the other 26 specimens presumably belonged to other species and have been subsequently dispersed.

1 ♀: Lastinghm, May 5, 1876, shore of brook nr Highfield [hand, on back of card mount] / British Isles / Marshall coll. 1904-120 / Ischnoceros / rusticus Fourcr. / Taschenbergia modesta Grav J.F. Perkins det III 1935. (BMNH). This specimen is referred to by Morley (1908: 14) as *Ischnocerus* [sic] *rusticus* (Fourcroy). Lastingham is in N. Yorkshire.

1 ♀: Oxford, Tubney, 1.v.04 / Taschenbergia modesta Grav. Det. J.F. Perkins 193[-]. (BMNH).

1 ♀: England, HT, Aldbury, 12.v.1951, R.B. Benson, BM 1951-583. (BMNH).

1 ♂: 63375 [hand] / Brit. Mus. 1953-259 / Scotland, Ross & Cromarty, Kinlochewe, 18.iv.1953, O.W. Richards / Taschenbergia modesta Grav det J.F. Perkins 1955. (BMNH).

1 ♀: Santon Downham, Norfolk. TL 818883. Malaise trap: heath with birch and pine. 16-25.5.1985 J. Field M RMSNH 1986.021. (NMS).

2 ♂: Amat, Easter Ross NH 4689 Mal. Tr. Native pinewood 5.1989 I. MacGowan NMSZ 1992.144. (NMS).

1 ♂: Beinn Eighe NNR, W. Ross NH 0064 Mal. Tr. Native pine 5.1989 I. MacGowan NMSZ 1992.143. (NMS).

4 ♂: Beinn Eighe NNR, W. Ross NH 015634 Mal. Tr. in birchwood 11-24.v.92 (2 ♂) and 12.5-21.6.92 (2 ♂) P.W. Brown NMSZ 1992.169. (NMS).

O. modestus seems to be univoltine, flying in May or as early as April. It appears never to have been reared. The sites from which the specimens in NMS came all include open heathy areas, as well as both conifers (*Pinus*) and deciduous trees (notably *Betula*).

Olethrodotis modestus is a medium-sized ichneumonid with a body length of about 10 mm. Once it is recognised as belonging to the subfamily Ctenopelmatinae, the female is immediately distinctive on account of its much longer ovipositor (sheath roughly as long as metasoma, about 0.85 as long as forewing) than any other British species of the subfamily apart from *Lathrolestes ensator* (Brauns) which differs in many respects, the easiest to express being its strongly pectinate claws (simple in *Olethrodotis*). Both sexes of *O. modestus* have eyes with sparse and rather short hairs, a character not found in any tribe of Ctenopelmatinae other than Olethrodotini which, as there is only one species of that tribe in the British fauna, is therefore also diagnostic (within the Ctenopelmatinae), although it is quite difficult to see and the male of *O. modestus* is in fact rather easily overlooked.

Acknowledgements

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The generic names of the British Carabidae (Coleoptera) explained

I thought it might possibly be instructive, and not without interest, to run through a series of generic names giving their literal or original meanings where possible. Such names are among the stock-in-trade of entomologists, few of whom have any inkling of how they came about – except for the minority of names that bear their meanings on their surface. Nowadays, most of their users have "small Latin and less Greek" so that associative memory has little to work on, and analytical understanding tends to be slight.

The British Carabidae will serve well enough to illustrate a typically wide range of meanings. The names under consideration will be found to vary widely from the straight-forwardly descriptive – often marking some special feature – to the thoroughly obscure or apparently meaningless, though the latter type is rare. In any group of similar extent, there will always be found a few names that appear to have been bestowed quite arbitrarily, or whose significance is not (or no longer) at all clear; and others that seem downright unsuitable.

Most specific epithets on the other hand (not considered here) are readily understood, provided only that one has a basic smattering of Latin such as most of us have contrived to pick up; while names of genera are commonly based on the other source of scientific words, namely Greek. But even those who have had no formal instruction therein need not despair; for so many of its relevant roots or elements have become familiar through scientific terminology as to make it no longer a firmly closed book.

In the explanations that follow, which I have kept to a direct translation as far as possible, the language of origin is to be understood as Greek if not otherwise stated. The signs for a long (¯) and a short (˘) vowel are occasionally used.

Cicindēla:	Latin, "glow-worm" (cf. *candēla* "candle"). A transferred name, or misnomer.
Ōmophron:	"of savage disposition".
Cychrus:	apparently shortened from *cychramus* "corncrake" (Aristotle, Pliny), now used for a genus of Nitidulidae. A reference to the beetle's stridulation is possible.
Carabus:	name of the stag-beetle (also the crayfish) in Aristotle. Allied to *Scarabaeus*.
Calosōma:	"beautiful body".
Leistus:	"robber, pirate, plunderer" (lēistes).
Pēlophila:	"mud-loving".
Nebria:	"a fawn": reference hardly clear.
Nŏtiophilus:	"damp-loving".
Blēthisa:	"thrown"; no explanation seems possible.
Elaphrus:	light, nimble.
Loricera:	"thong-horned", from the bristles on the antennae.
Dyschirius:	"weak handed", from the short thin pro-tarsi, or perhaps "hard to manage".
Clivina:	Latin *clivus* "a slope" seems pointless; probably an invented name.
Broscus:	"feeding, grazing, browsing", from its voracity.
Miscodera:	a tautological name, both parts meaning "neck", on account of the evident "waist" between thorax and hind-body.
Patrobus:	unclear.
Perileptus:	"of slender outline".
Aepus:	"steep, difficult" (application hardly clear).
Thalassophilus:	"sea-loving" (a misnomer as it frequents edges of *fresh* water).
Trĕchus:	"running".
Asaphidion:	"inconspicuous", with diminutive ending taken from next.
Bembidion:	"a little spinning-top".
Tăchys:	"swift".
Pōgōnus:	apparently "bearded" (pōgōn "beard"); hardly clear.
Stomis:	"having a prominent mouth" (stŏma).
Pterostichus:	refers to the "wing-rows", i.e. elytral striae.
Abax:	"a flat plate", from its broad flat surface.
Calăthus:	"a wicker basket" (application unclear).
Sphodrus:	general sense "large and powerful".
Laemostĕnus:	"narrow throat" (should have been *Stenolaemus*).
Platydĕrus:	"(with) broad neck" (i.e. pronotum).
Synŭchus:	apparently "holding (or held) together"; unclear.
Olisthopus:	"slippery-footed".
Agōnum:	"without angles" (of the pronotum).
Perigōna:	*peri* "around", *gōnon* "angle"; hardly clear.
Amāra:	usually explained as Latin *amārus* "bitter", from the difficulty in identifying them.
Zabrus:	apparently an invented name.
Ophonus:	ditto.
Harpălus:	"rapacious, ravenous".
Anisodactylus:	"unequal fingers", with reference to clothing of underside of male protarsi.
Scybalicus:	"associated with rubbish".

Diachrōmus: “of diverse colours”.
Dicheirotrichus: “with two hands hairy”, i.e. the soles of male protarsi.
Bradycellus: “slow-moving”.
Stĕnolŏphus: “narrow crest” (application hardly clear).
Acupalpus: Latin, “with needle-like palpi”.
Lĭcĭnus: name of a barber and wealthy freedman of the emperor Augustus.
Badister: “a walker”. (cf. *Dromius*)
Panagaeus: “all-admirable”.
Chlaenius: chlaina, a woollen cloak worn by the Greeks.
Callistus: “fairest, most beautiful”.
Oodes (3 syllables): egg-shaped, ovoid”.
Odacantha: Greek *odous* “tooth” and *akanthos* “thorn” (meaning thorn-like tooth?).
Masoreus: origin obscure.
Lebia: lĕbias, a kind of fish, is the nearest word.
Demētrias: a city in Thessaly, Greece (Dēmēter “earth mother” = Ceres.)
Dromius: drŏmeus “a runner”.
Microlēstes: “little robber”, cf. *Leistus*.
Metablētus: “turning, changing direction”.
Liony̆chus: “smooth claw” (of tarsi).
Cymindis: “a night-hawk” (application obscure or arbitrary).
Polistichus: for *Polystichus* “many rows”, with reference to the striae.
Drypta: an over-ripe, mouldy olive. (If descriptive, a very poor effort!)
Brachinus: evidently based on *brachys* “short”, but the reason is not apparent.

–A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

An unsuccessful attempt at rearing *Dahlica inconspicuella* (Stt.) (Lep.: Psychidae)

On 28 January 2001, I collected larval cases of *Dahlica inconspicuella* from beneath discarded roofing felt just above the strand line on the shingle beach at Dungeness, East Kent. These produced three adults (one male and two females) over the following month, but I was unable to obtain a pairing due to the male having died before the females emerged. As I wished to rear this species, I contacted Dennis O'Keeffe and he agreed to send me further material. This he collected from the same locality on 2 April, and thirteen cases duly arrived in the post at 08.30 hours on 4 April. On unpacking these I found one female, which emerged in transit, had adopted a “calling” posture. By 18.00 hours three further females and a male had emerged. It was apparent that the male had paired with three of the females, as their abdomens, void of ova, showed that these individuals had oviposited. The remaining female died a few days later, presumably unmated as it did not oviposit. No further adults emerged from this material.

Ovipositing females laid in their larval case, beneath their pupal exuviae which projected from the anterior end of their case. Ova were oval in shape, creamy white in colour and with a soft smooth chorion, no obvious sculpturing being visible at $\times 25$ magnification. Investigation of the cases showed that nine contained ova, hence six must have held ova at the time of collection as only three females had oviposited in captivity.

By 27 April, two small, pale-brown spots were visible through the chorion of one ovum, positioned towards one end. These darkened and enlarged over the following three or four days, and as this process advanced it became clear that these were the developing eyes and head capsule of the larva within. On 3 May, newly emerged

larvae were present and by 12 May a total of 320 larvae had hatched from the nine female cases containing ova, an average of around 35 per female. In order to identify a suitable diet on which to rear these, the larvae were placed in an unlined culture vessel. They were supplied with a choice of finely chopped dead and live grass, moss, oak bark coated with the yellow lichen *Xanthoria parietina* and the terrestrial epiphytic alga *Pleurococcus viridis*, and a dead (dry) microlepidopteran. Fine, sieved clay particles were also added, as fine grit had been used by the larvae of the parental generation during the construction of their larval cases. Almost instantly this material was used by the first instar larvae for constructing minute cases, which were clearly triangular in cross section, even at this early stage, and had a slight collar projecting around the anterior opening which was located on the underside at one end of the case. Once their cases had been constructed the larvae migrated to the oak bark and commenced feeding on the algae growing on this. Very little interest was shown in the moss, lichen or grass and the dead microlepidopteran was ignored completely. Hence, further culturing was conducted using algae as the larval pabulum.

The larvae were maintained under a natural photoperiod at room temperature. By day they hid amongst and beneath the tree bark, but by night they came up to graze on the algae. The culture was sprayed once a week with distilled water, after which larvae were observed to search for water droplets and imbibe these in the same manner as described for larvae of *Luffia ferchaultella* and *L. lapidella* (*Br. J. ent. nat. Hist.* **12**: 17-25). During the first week in August, larvae began to climb the walls of the culture vessels, though they did not fix their cases at this time. Additional water spraying was found to reduce this behaviour, but did not eliminate it, as it was found to be due in part to positive phototaxis, with the larvae moving towards a source of illumination.

Larval instars were separated on the basis of head capsule size. Second instar larvae were observed on 26 May, third instars on 16 June and fourth instars on 25 July. By 24 August, final (fifth) instar larvae were present.

The larvae changed their diet around the end of their third instar or early in their fourth, exhibiting a distinct preference for fresh dead Lepidoptera. Unfortunately, by this stage approximately 50% of the larvae had died as a result of desiccation, starvation or fungal attack. By the end of September, all feeding activity had stopped and the surviving larvae had loosely fixed their cases to the lid of the culture vessel and beneath pieces of bark. However, mortalities continued to occur and by 26 December only around 20 survivors remained. Movement was observed with one larva on 27 February 2002, but this last survivor had died by 2 March. Consequently, no adults were reared from this batch of larvae.

On 29 June, 20 third instar larvae were removed and sub-cultured under controlled environmental conditions (Gallenkamp illuminated incubator, photoperiod 14-hour light and 10-hour dark, temperature 20°C) on a diet of algae. Growth was found to be slower than those in the original culture, which was maintained under a natural photoperiod and temperature regime. All 20 had died by the end of September.

On the 10 November, 20 larvae from the original stock were sent to Uwe Widowski in Germany, as he and a colleague had expressed an interest in rearing this species. Uwe used a different approach, placing the larvae outdoors on bark with algae and lichen as a pabulum and spraying them with water daily. This proved to be the most successful method, as three males and two females duly emerged during the early Spring of 2002.

Obviously the various artificial culture conditions I used were inadequate in some respect. The sub-culture placed in a controlled environmental chamber was unsuccessful. This regime has been used successfully for *Luffia lapidella* (Goeze) and *L. ferchaultella* (Stephens) (*Br. J. ent. nat. Hist.* **12**:17-25). The conditions provided to the culture maintained in an unheated room under a natural photoperiod were also unsuitable. This method has been successful with *Dahlica triquetrella* (Hübner) (*Br. J. ent. nat. Hist.* **12**: 29-30) and *Bankesia douglasii* (Stainton) (in press). The only approach to rearing this species which met with any success was that adopted by Uwe. He achieved a 25% success rate by overwintering the full-grown larvae out doors.

At present I am attempting to rear a second batch of larvae. These originated from pupae collected by Dennis at Dungeness on 19 February 2002. Adults hatched between 26 February and 7 March, and 11 females laid ova between these dates. The ova hatched between 23 and 30 March, producing 417 larvae. The average number of ova per female, based on the number of larvae hatching, was 38. This is similar to the average of 35 per female obtained with the first rearing attempted in 2001. At present these larvae are again being cultured under a natural photoperiod in an unheated room. This time the culture vessels contain a layer of sieved *John Innes* Potting Compost with the larval pabulum (epiphytic algae on oak bark) placed on this. The numbers of larvae per culture vessel have also been reduced to around 40 or so, to avoid over crowding. The intention is to introduce a supply of fresh dead insects, as well as algae, to the larvae around their third or fourth instar, then to overwinter them outdoors. So far they are feeding well, but it will be another 10 or 11 months before I know if I have succeeded with this species this time.– IAN SIMS, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

BOOK REVIEWS

The larger moths and butterflies of Herefordshire and Worcestershire: An atlas by **Michael Harper and Tony Simpson**. 195 + xvi pp., A4, wire bound with acetate covers. ISBN 0 9519749 1 2. Butterfly Conservation (West Midlands Branch), 2001. Available from "West Midlands Branch Butterfly Conservation" (to whom cheques should be payable), 65 Wentworth Road, Birmingham B17 9SS. £7.50 (members of Butterfly Conservation or the Herefordshire & Worcestershire Wildlife Trust), or £10 all others. Postage and packing of £2.00 should be added in all cases.

This splendid atlas records, principally, the efforts of the two authors, who are the Moth Recorders for the two vice counties, over the past thirty years, supplemented by the meagre amount of information that is available from other sources. Quite why an area that has such hot spots as the Wyre Forest (Worcestershire) and the Wye Valley (Herefordshire) should apparently have so few people actively recording its moths is something of a surprise. Perhaps they didn't send in their records? What a good job they have Messrs. Harper and Simpson to redress the balance! The geology and topography of the two counties are introduced and there follows a very brief history of recording here. More interesting, however, are the next few pages that elaborate in some detail upon significant changes in the moth and butterfly fauna, including discussion on presumed extinctions, new arrivals, overlooked species, newly recognised species, transient residents, migrants, increasing species and declining species. There is much valuable information in these pages and, for one who has by now grown accustomed to the soft life and multiplicity of moths in the south-east, not a few surprises.

Three distribution maps are presented for each of the 650 species recorded. Two smaller size versions present distribution in the two periods pre-1914 and 1914 to 1969; a larger map shows records from the period 1970 to 2000. An Appendix lists the more important records made during 2001 before the work finally went to press. Data is presented at ten-kilometre square level for all three categories. There does not seem to be a coverage map, but a glance at those for *Noctua pronuba*, *Agrotis exclamationis* and a selected few other ubiquitous species suggests that the two authors have evidently been successful in their efforts to record in all of the 10-km squares in the two counties. Maps are accompanied by the bare minimum of text.

There are several appendices. Maps of spreading and declining species are presented with the relevant year in the map square and there are lists of species of conservation significance and of all the (presumed) extinct, overlooked and declining species discussed in the introductory pages. There is a useful gazetteer of place names and a list of recorders (I am pleased to see that my mid 1980s Wyre Forest records are all included). Two indices are presented – scientific names and English names (though a typing error has resulted in them both being labelled as English names). A reference list and bibliography bring up the rear. A selection of colour photographs of moths and butterflies is also included and the front cover bears paintings of moths executed by Richard Lewington.

This work covers the families of moths traditionally regarded as "macros", together with the butterflies. The smaller moths will be covered in a second volume, which will also include a fuller description of county habitats and conservation issues. Together, these will form an important and comprehensive record of the lepidopterous fauna of Hereford and Worcester – the first in a hundred years. Along with David Emley's recent work on the moths in the adjoining county of Staffordshire (see review in *Ent. Rec.* **113**: 287-288) they achieve coverage of a good-sized portion of the West Midlands region of Britain.

I would criticize the choice of binding, and I am sure that in time well-used copies will start to come apart as the paper tears around the wires. Mind you, for the very low asking price some people may choose to buy two copies – one to keep and one to use! Not such a bad idea. The authors are to be congratulated for their hard work and dedication, and anyone whose records do not appear to have been included should consider submitting them at once!

Biological atlas of aquatic insects by **W. Wichard, W. Arens & G. Eisenbeis**. 339 pp., 912 monochrome electron microscope photographs, 156 text figures. 240 x 170 mm., hardbound. ISBN 87 88757 60 9. Apollo Books, 2002. DKK 490 (£40.42 at 11 April 2002) from Apollo Books, Kirkeby Sand 19, DK-5771 Stenstrup, Denmark.

This staggering collection of electron micrographs of insects, at magnifications from as little as 2.5 to as much as 12,000 times natural size, provides a fascinating insight to aspects of aquatic adaptation that are overlooked or forgotten by most of us who specialise in terrestrial creatures. A wide range of representative taxa has been chosen to include both aquatic and semi-aquatic species from most Orders. The work was, we are told, inspired by the fascinating variety of adaptations to life in the aquatic environment. Central to the work are the basic functions of respiration and osmoregulation – the principal functions of an aquatic existence. These areas are explored pictorially against the background question of what originally made terrestrial insects turn into aquatic creatures. A wealth of text occupies the facing page to each full page of photographs.

This book is intended for both professional and amateur entomologists. I admit that the initial attraction is the fascination of the pictures. Nevertheless, each has a reason for its publication. From the chloride cells of mayfly larvae (which assist in ion transport as a part of the osmoregulatory process) to the pygidial glands of dytiscid beetles (which secrete wetting agents to cover the beetle each time it submerges and antimicrobial compounds that prevent the development of a bacterial film on the beetle's body), every page seems to contain a fascinating fact. This is well worth the forty pound price tag.

Continued from back cover

Book Reviews and Notices

THE ENTOMOLOGIST'S RECORD
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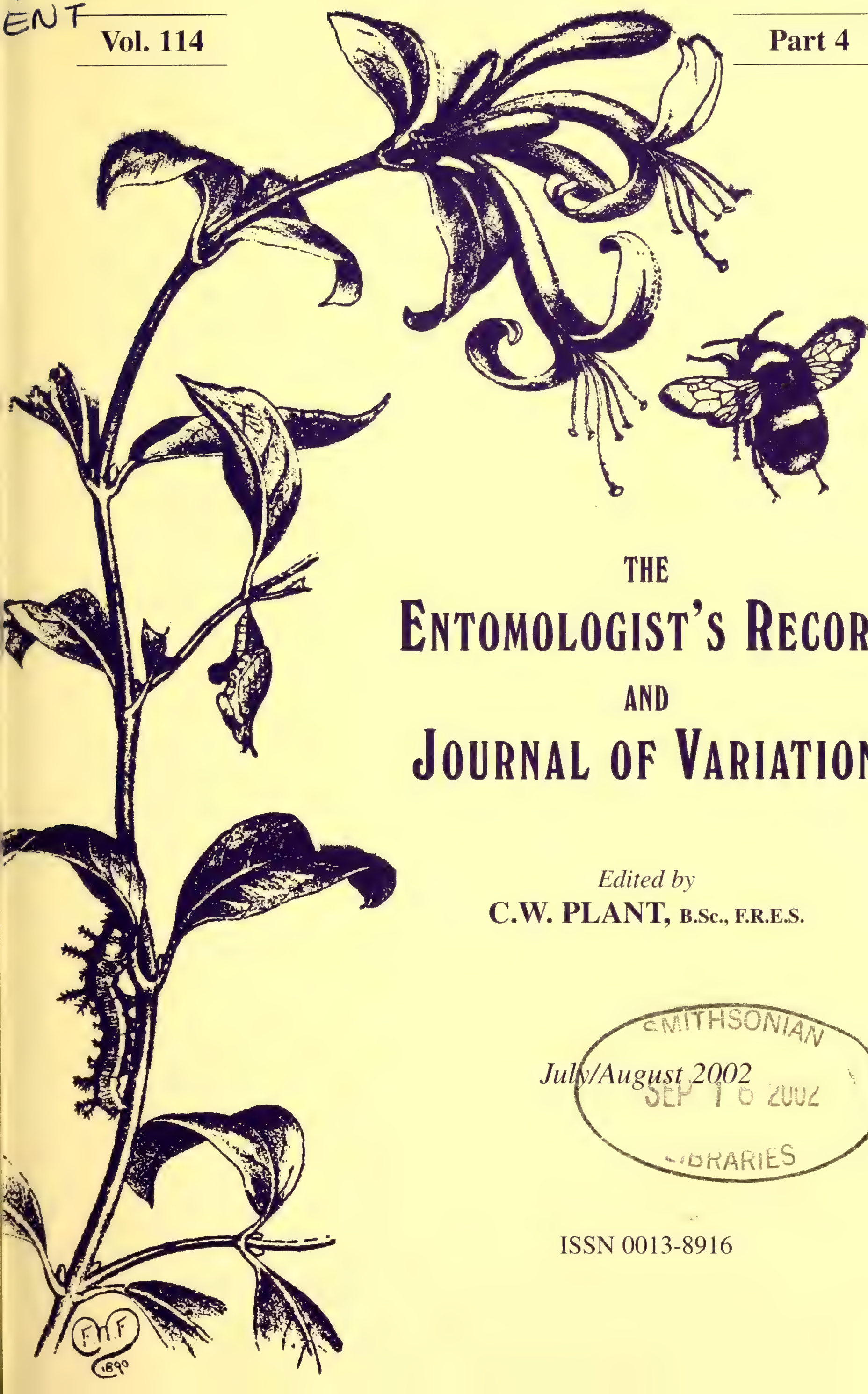

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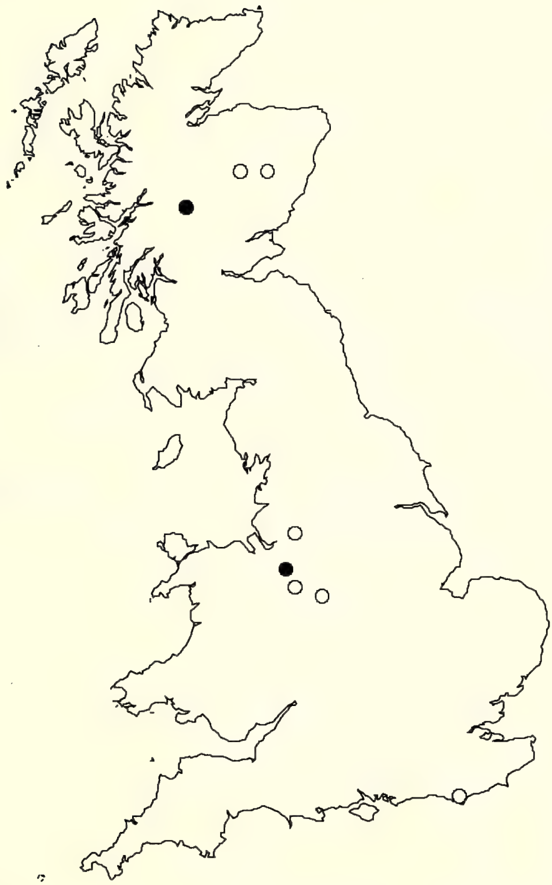

Figure 1. Past and present distribution of *Cryptocephalus decemmaculatus*. [Black symbols = extant populations (positive surveys within last five years); White symbols = putative extinct populations).

EDITORIAL

Three weeks before this issue of the journal was published, we had filled only 23 of the 48 pages that we normally print. The fact that there are now, in fact, 48 pages of text is entirely due to the generous responses received as a result of my urgent appeals for copy to a long list of entomological colleagues (not to mention this editorial and three pages of adverts!). Whilst their efforts in generating, literally overnight, short communications of interest and relevance is very much appreciated, I cannot help but observe that whilst it is clear that there is material out there worthy of publication, it may not have arrived on my desk had it not been specifically requested. Naturally I am not about to identify those whose articles were supplied in this manner, as distinct from others who had already submitted their writings, but I think that the message is clear. Nor do I believe that we are the only journal suffering a shortage of copy at this moment in time.

As it stands there is no copy at all for the September issue of the journal and only the microlepidoptera review promised for November. I cannot believe that the lepidopterological community of Britain has, as a whole, absolutely nothing worthy of sharing with colleagues. The editorial address is to be found inside the front cover. If insufficient material is received, we may have to skip the September issue this year.

ADDENDUM

It is most unfortunate that Figure 1 in the paper by Ross Piper – Notes on the distribution, ecology and captive rearing of *Cryptocephalus decemmaculatus* (L.) (Col.: Chrysomelidae) – in the last issue of this journal (Volume 114, Part 3), was not printed. The missing figure is included with this issue of the journal and should be inserted after page 123.

WEBSITE

We regret that as a consequence of the demise of Netscapeonline, we have lost our website. Unfortunately, we did not receive notice that this would happen. We are trying to resurrect the site on a new server and will advise subscribers in these pages in the near future.

LEPIDOPTERA OF ABERDEENSHIRE, KINCARDINESHIRE AND BANFFSHIRE – 9th APPENDIX

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Abstract

Species of Lepidoptera new to north-east Scotland are reviewed. Twenty-six new species are noted; a further three are recorded after an absence in excess of one hundred years.

Introduction

A remarkable number of new and sometimes unexpected species has been added to the north-east Scotland list (VCs 91-94) in the three years since the last Appendix (Palmer, Young and Leverton, 1998). Twenty-nine species are recorded here, three of which have been rediscovered after a gap of more than a century. Some of the others have almost certainly been overlooked for many years, some are migrants, but some very obvious macrolepidoptera are certainly new arrivals. Whilst many of the species new to Kincardineshire and Aberdeenshire have probably colonised the counties from the south, the four species of macrolepidoptera new to Banffshire have in all likelihood arrived from the adjacent counties to the west, East Inverness-shire and Morayshire, where all four are known to be resident.

Unless otherwise indicated the records are those of one or more of the authors. Other contributors, with their abbreviations in the list in parentheses, are David Barbour (DAB); Keith Bland (KPB); Helen Gardner (HG); Bob Heckford (RJH); Cedric Holmes (CWNH); John Langmaid (JRL) and Nick Littlewood (NL). Three Rothamsted Insect Survey traps now operate in the area, all have produced interesting records. The operators are Jon and Marion Bailey (Monymusk), Peter Holden (Mar Lodge) and David Hamilton (Glen Saugh).

Breaking with previous traditions, we have omitted species which are not new to north-east Scotland, but have merely been recorded from one or more new VCs within the area. These data are now adequately covered by the microlepidoptera reviews of the intervening years (Langmaid & Young 1999, 2000, 2001).

Species new to north east Scotland

Nepticuidae

Stigmella svenssoni (Johan.) – VC 93: Haddo House, x.2000, mine on oak (Langmaid & Young, 2001). VC 92: Craigendarroch oakwood x.2001, mines on oak. Probably an overlooked species, recorded from scattered localities throughout Scotland.

Incurvariidae

Lampronia pubicornis (Haw.) – VC 92: Inver, one bred x pupa on rose (JRL). The only known previous Scottish record is of a specimen in Cambridge University Museum of Zoology. It is labelled "Linwood, Renfrews.", and is undated, but was acquired by the museum in 1941.

Psychidae

Narycia monilifera (Geoff.) – VC 91: Muchalls vi.1998, cases on trunk of *Acer pseudoplatanus*. VC 93: Gight woods, vi.98, cases on trunks of *Abies nobilis* (RMP, MRY & JRL). Probably a long established species, recorded from several scattered localities in Scotland.

Acanthopsyche atra (L.) – VC 92: one larva in its case in a pitfall trap at Mar Estate near Braemar viii.2000. Well known from the central Highlands of Scotland, this species is probably another long overlooked resident.

Yponomeutidae

Argyresthia trifasciata Stdgr. – VC 92: Bucksburn one, vi.1999 (Palmer, 1999). The first Scottish record of this species, there have been no subsequent records and attempts to rear it have so far failed, despite the finding of probable larval workings on *Cupressocyparis leylandii*.

Coleophoridae

Coleophora pappiferella Hofm. – VC 92: Morrone Hill, vi.2000 (Heckford, 2001). Otherwise recorded only from limestone areas of western Ireland.

Elachistidae

Elachista maculicerusella Bruand – VC 91: St. Cyrus, following the finding of one empty mine on *Phalaris* (JRL) in 1997 (Langmaid & Young 1999), a single moth was taken at light ix.1999. This species appears to be a resident and at present this is the most northerly record in Britain.

Ethmiidae

Ethmia pyrausta (Pallas) – VC 92: one on The Cairnwell, v.2001 (KPB). After a gap of 143 years, this species was rediscovered in Britain in 1996 on nearby Glas Maol (VC 90) (Young & Smith, 1997). Probably a long overlooked resident, once the foodplant (?*Thalictrum* sp.) is confirmed, and larvae are found, the species will probably prove much commoner than the three known British specimens suggest.

Gelechiidae

Scrobipalpa murinella (Dup.) – VC 92: Morrone Hill, vi.2000 (Heckford, 2001). Otherwise only known from the west of Ireland and the Scottish islands of Rum and Coll.

Syncopacma albifrontella (Hein.) – VC 92: Morrone Hill. Discovered by RJH in 2001 and new to Britain, a paper on this species is in preparation. We are grateful to RJH for his permission to mention this species here.

Momphidae

Mompha miscella (D.& S.) – VC 91: Muchalls, larvae on *Helianthemum* (Reid, 1893). VC 92: Morrone Hill, adult and vacated mines on Helianthemum vi.2000. A species which has been awaiting rediscovery for many years; vacated mines, probably of this species, have been found in several localities but we have been loathe to record it without the confirmatory presence of an adult.

Tortricidae

Aethes rubigana (Tr.) – VC 91: St. Cyrus vii.1999 (MRY). Probably a resident, moths were found commonly sitting on the foodplant, *Arctium lappa*.

Eucosma obumbratana (L.& Z.) – VC 91: St. Cyrus, possibly a migrant, a single specimen came to light ix.1999.

Eudonia alpina (Curtis.) – VC 92: Common in a few localities near Braemar (Reid, 1897); this species was rediscovered on The Cairnwell in 1998 (KPB), and was present in the same locality in 1999 and 2001.

Pyralidae

Platytes alpinella (Hb.) – VC 92: A single specimen at light, Bucksburn, 1998, almost certainly a migrant.

Trachycera advenella (Zinck.) – The sudden arrival of this moth in three vice-counties in the last two years suggests that it may become our most recently established resident, although at present the three different and widely separated habitats in which moths have occured suggests that these specimens were strays. VC 92: Spittal of Glenmuick ix.2000 (HG) (Langmaid & Young, 2001). VC 91: Scolty Hill near Banchory, one, viii.2001. VC 93: Oldmeldrum, two, viii.2000.

Pterophoridae

Hellinsia osteodactylus (Zell.) – VC 91: St. Cyrus vii.1999 is the most northerly British record. (Young, 1999). Probably an overlooked resident, several moths were seen around the foodplant (*Senecio* sp.).

Geometridae

Mesoleuca albicillata (L.) – VC 91: Inchmarlo near Banchory one, vii.1998 and one vii.2000 (CWNH). It is possible that this species is another scarce and local resident, but based on only two specimens this remains speculation.

Coenocalpe lapidata (Hb.) – VC 92: One in the Rothamsted trap on the Mar estate near Braemar ix.2001. As this species is not a noted wanderer the probability is that there is an undiscovered colony in the Braemar area.

Eupithecia innotata f. *fraxinata* Crewe – Previously recorded only from VC 94, apart from old records [rare, near Aberdeen; Cowie, 1901]. This species may have been overlooked in Aberdeenshire but we suspect that it has spread rapidly in the last two years. VC 91: Inchmarlo 1999 (CWNH). VC 92: Rothamsted trap, nr. Monymusk three in 1998 and several in 1999. VC 93 Oldmeldrum two in 1999.

Macaria notata (L.) – VC 94: A single specimen at Carron (NJ 2041), vi.2000 (DAB). Very probably now a resident and recent coloniser from the west, it is known to occur in counties bordering Banffshire.

Selenia tetralunaria (Hufn.) – VC 94: Craggan, one, v.01 (MRY & DAB), possibly a stray from the west but a very probable addition to the list of resident Lepidoptera.

Ourapteryx sambucaria (L.) – VC 91: Inchmarlo, Banchory one, vii.1998. Three further specimens at the same location in 1999 and two in 2000 (all taken by CWNH) are sufficient evidence that this conspicuous moths is a fairly recently arrived resident in this well worked area of Deeside.

Deileptenia ribeata (Cl.) – This species also appears to have colonised north east Scotland very recently. Specimens taken at light in VC 91 (Inchmarlo) between 24.vii and 19.ix.1999 and during the same months at the Rothamsted trap in VC 92 (Monymusk) have been recorded previously (Palmer & Holmes, 2001). The species seems to be firmly established at both sites having been recorded annually since (14 at Monymusk in 2001) and also recorded at Scolty Hill, near to the original Kincardineshire site, in 2001.

Nolidae

Nola confusalis (H.-S.) – VC 94: Craggan, one, v.2001. Ordiquhill, Cornhill, one, vi.2001. A predictable addition to the list, this species is well known from adjacent counties of Moray and E. Inverness.

Noctuidae

Noctua interjecta Hubn. – VC 91: St. Cyrus one, ix.1999, probably a migrant.

Orthosia cruda (D.& S.) – VC 91: A single specimen in the Rothamsted trap at Glen Saugh; iv.1999. Southern inland parts of VC 91 are poorly worked, this species may be a recent arrival but may have been undetected there, at the northern edge of its range for some time.

Brachionycha nubeculosa (Esp.) – VC 92: A very exciting addition to the list, all of the other macrolepidoptera which are known from the central highlands, the Spey valley, Aviemore, Rannoch etc. are known also from Deeside so the discovery of this species should perhaps not be too surprising. Two moths came to an m.v. trap run by NL, iv.2002 in an area west of Braemar, and at higher elevation than the very well worked areas of Deeside from Dinnet and Ballater to Braemar.

Schrankia costaestrigalis (Steph.) – VC 94: Ordiquhill, Cornhill, one at m.v. viii.1998. Another "macro" which is probably in the process of colonising Banffshire from the west.

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2001 update on the English Nature Species Recovery Projects for three endangered moths

This note provides the latest news from the Species Recovery Projects for three of the moths that are listed on Schedule 5 of the Wildlife & Countryside Act (1981 & amendments). All are UK Biodiversity Action Plan Priority Species.

Barberry Carpet moth *Pareulype berberata* (D. & S.) (Geometridae)

The Barberry Carpet was adopted by the Species Recovery Programme in 1995. The history and progress of this project is given in *British Wildlife* **11**: 175-182 (2000). The moth is endangered due to the historic removal of the larval foodplant, Common Barberry *Berberis vulgaris*, from hedgerows and wood edges and the risks of damage and loss of Barberry at the few remaining sites. Farmers have been encouraged to eradicate Barberry from arable farmland since the late nineteenth century when the plant was discovered to be an alternative host for the Wheat-rust fungus. In 1995, only two colonies of the moth were known, one of which has been destroyed by stubble-burning.

As a result of extensive surveys as part of the Recovery Project, there are now nine localities in the UK with positive records of the moth between 1995-2001, mainly in Wiltshire, with one each in Gloucestershire and Dorset. Many other sites for wild Barberry have been searched without success, in counties which include Devon, Somerset, Dorset, Hampshire, the Isle of Wight, Sussex, Wiltshire, Gloucestershire, Oxfordshire, Northamptonshire, Bedfordshire, Lincolnshire, Nottinghamshire, Norfolk, Suffolk and Essex. Formerly the moth was widespread in central and southern England.

Major objectives of the Recovery Project are to safeguard all known populations of the moth by agreeing appropriate management with the landowners and to establish additional populations to restore the former range of the moth. This is being done in two ways. The first involves locating existing stands of Barberry which look suitable. These stands have to be inspected for caterpillars for five generations to determine whether the moth is already present. If not, caterpillars and/or adult moths may be released onto the stand. Livestock is being reared in captivity for this purpose. "New" populations established in this way have now persisted for several generations at two sites, one in Wiltshire and one in Lincolnshire. Other less advanced trials are underway on a further four sites, two in Northamptonshire, one in Bedfordshire and one in Suffolk and several other sites have been adequately checked and are ready for trials to begin. The other method involves cultivating Barberry bushes for planting out on sites without Barberry or to supplement existing bushes, on which to release the moth. Several hundred Barberry bushes are due to be planted this winter in various sites, having been grown from seed or cuttings 1-3 years ago.

The highlight of 2001 was the finding of wild caterpillars during August in Wiltshire on two groups of Barberry bushes which had been up-rooted and moved the previous winter to prevent their destruction during mining of aggregates. This

result proved that moths had survived, as pupae in large root-balls of soil moved with the plants, in sufficient numbers to emerge, find each other, mate and lay eggs on the bushes.

The project has a long list of partners and helpers, including many private landowners, conservation organisations and the Zoo Federation. In particular I thank here Aggregates Industries for supplying the personnel and heavy equipment to excavate, translocate and replant the above-mentioned bushes. Funds raised via National Moth Night are being used to purchase plants and rabbit-guards to supplement the translocated bushes.

Reddish Buff moth *Acosmetia caliginosa* (Hb.) (Noctuidae)

The Reddish Buff moth would probably have died out as a British species by now had it not been for the work of the Species Recovery Project. The moth formerly occurred on a number of sites within the New Forest, Hampshire, at one Hampshire site outside the New Forest and on at least four sites on the Isle of Wight. It has been lost from all but one of these during the twentieth century, surviving only in one locality on the Isle of Wight, where the moth inhabits open heathy ground with abundant Saw-wort *Serratula tinctoria,* the larval foodplant. The reason for its disappearance from all the other sites appears to be loss of habitat, in some cases due to scrub encroachment, in others due to the planting of conifer crops. The moth fails to breed as soon as the Saw-wort becomes shaded and long before the food-plants die out.

The first priority of the Recovery Project has been to maintain the existing breeding grounds and extend them onto adjacent land. This involves annual cutting and scrub clearance on different parts of a complex site with the co-operation of various private land-owners. Parts of the site have also been browsed by goats, with useful results. Sadly, and unexpectedly, the last of the local goat-owners died in 2001, so goats may not be available from 2002.

An annual monitoring programme has been established which provides an indication of the population density by light-trapping for adult moths and timed nocturnal searches for larvae. In 2001 the numbers of adults and larvae seen were fairly good considering the poor weather and paucity of moths in general over the last three seasons.

There were several highlights in 2001. The most significant was the discovery of larvae feeding on Saw-wort plants growing in the farthest extension of the breeding grounds in an area reclaimed from scrub, indicating that the moth is now breeding over the whole of the increased area made available to it. For the second year running, a number of adult moths were seen by day, which is probably a reflection of reasonable numbers and weather. One of the moths was a female, a very rare event, probably the first seen by day in ten years of work on the moth.

In 2001, a total of 495 captive-bred larvae were released into a site in the New Forest for the first time. This marks the beginning of a fourth establishment trial. One trial has been underway in Hampshire, but outside the New Forest, with the release of 700 caterpillars in July 1996. Eleven adults were seen in 1997 and one in

1998 but the population appears to have been lost subsequently, coinciding with a period when the site became a little overgrown and rank. The site is now back in good condition so another establishment attempt may be made. Two establishment attempts are underway on the Isle of Wight. At one the moth has bred for at least two generations, but monitoring indicates that densities of adults and larvae are extremely low. Following the release of 1,412 larvae in 1996, no adults or larvae were seen in 1997, one adult was trapped in 1998, another in 2000 but none again in 2001. Establishment is also proving difficult on a second site on the Isle of Wight where 308 larvae were released in 1998, an adult was light-trapped in 1999, but no larvae were found and negative results followed in 2000 and 2001. Again, the disappearance coincided with a period of less than ideal management.

The numbers of larvae available for release in the last three years have been limited by poor captive-breeding success, but now more people are involved, husbandry and skills have improved and productivity has increased as a result, which enabled the release in 2001.

Searches have now been made of most of the promising sites where Saw-wort has been reported, in the counties of Hampshire, Dorset and the Isle of Wight, all without success. It appears that not only are there no other surviving populations of this moth, but there are no other places which share all the features believed to be important on the occupied site. Furthermore the moth is proving to be rare and in decline in Europe, largely due to habitat loss. The surviving British site and the results of our studies and management experience are proving to be of international interest and importance. Encouragingly, there is room to expand the British breeding grounds, which could be increased by at least 50% in the next five years.

Again, a large number of partners are involved in this project. I would particularly like to thank the Hampshire and Isle of Wight Wildlife Trust, the Isle of Wight County Council, the various groups of Conservation Volunteers who help with the practical management work and all the private land-owners.

Black-veined Moth *Siona lineata* (Scop.) (Geometridae)

In the UK the Black-veined moth is confined to four rough chalk grassland sites in Kent. Formerly there were also large populations in Essex, Dorset and Somerset. The moth requires a rough sward 10-25 cm tall containing herbs such as Marjoram and knapweeds, on which the caterpillars feed. There must be sufficient cover to hide the vertical cocoons which are spun amongst dry grass stems. Factors which have caused the loss of colonies in the past and which remain as threats include overgrazing, fires and encroachment of the open grassy breeding habitat by scrub. Loss of habitat through ploughing and reseeding has been a major problem in the past, but all four sites now appear safe in this respect.

The numbers of the adult moths are monitored annually by weekly transect walks in which the adults are flushed and counted by day. From these studies it is clear that numbers have increased greatly on one privately owned site (A) in the last five years in response to appropriate management and are now at their highest since counts

began in the 1970s. At the same time, the numbers on a nearby National Nature Reserve (B) have been reduced to very low levels by overgrazing, which has virtually eradicated the moth from about a quarter of the breeding grounds. In contrast, favourable management of this site between 1989 and 1994 succeeded in building the numbers up to an all-time peak. A third site (C) has been colonised during the 1990s, probably as a result of over-spill from the NNR when the numbers were high. On the fourth site (D) there is a long-term resident population which was almost lost during a fire in the early 1980s, recovered to achieve the highest densities of adults of any site in the 1990s, but has suddenly plummeted, probably in response to a cutting operation in the winter of 2000-2001, to the point where none were seen on weekly counts in 2001 and continued survival is in doubt. There have been two fires at site A in the last five years, which destroyed all the moths in the burned areas. Fortunately the burns only covered a fraction of the site and the moths have been able to recolonise from the unburned areas.

Apart from making annual efforts to maintain the populations on the above four sites by appropriate management, and monitoring the results, the Recovery Project aims to double the number of breeding sites. All the most promising areas of rough chalk grassland in this part of Kent have been searched for undiscovered colonies of the moth and several have been selected for attempts to establish new colonies.

Siona lineata (Scop.) The Black-veined Moth (Library photo)

Unlike the Barberry Carpet and the Reddish Buff, the Black-veined moth has proved to be difficult to breed in numbers in captivity, despite repeated attempts by skilled lepidopterists. Consequently, in 2000 six mated females, accompanied by three males, were translocated from site A to a fifth site (E), which had been restored to an appropriate condition by two years of carefully controlled grazing. In 2001 two adults were seen on the site, indicating that there has been successful breeding, at least in the short-term.

Several other sites are being prepared for establishment trials, but the pace of progress is limited by the small numbers of adults it is safe to remove from the current sites. We can also report that the Black-veined moth population has expanded into three additional fields now managed for it on the NNR. Over the next several years, there are plans to create more chalk grassland habitat in Kent, some of which will be suitable breeding habitat for the Black-veined moth. The Kent Wildlife Trust are involved in a major project to recover from scrub a site which was formerly occupied by the Black-veined moth. The site is sufficiently close to an occupied site that colonisation is likely once the habitat reaches a suitable condition.

Incidentally, efforts to limit grazing and restore a former Black-veined moth site for establishment trials have led to the conservation of another rare moth, the Straw Belle *Aspitates gilvaria* (D.& S.), a UK Biodiversity Action Plan Priority Species. The Straw Belle was nearly eradicated from the site by overgrazing, but survived in an adjacent quarry to recolonise once grazing pressure was eased.

The list of partners in this project continues to grow. In addition to the private landowners, I thank particularly Bob Russell, Allen Williams, the Kentish Stour Countryside Project and the Kent Wildlife Trust.– PAUL WARING, 1366 Lincoln Road, Werrington, Peterborough PE4 6LS (E-mail: paul_waring@btinternet.com).

The Red-headed Chestnut *Conistra erythrocephala* (D.& S.) (Lep.: Noctuidae) new to the Isle of Wight

On a recent visit to the Isle of Wight, Barry Goater and Brian Elliot were looking through Brian Warne's collection and noticed an example of the Red-headed Chestnut *Conistra erythrocephala* placed amongst his series of Beaded Chestnut *Agrochola lychnidis* (D.& S.). This was taken at light on 3 October 2001 at Binstead and is the first example to be recorded on the Isle of Wight. Less than a dozen of this species have been taken in the British Isles in the last hundred years.– SAM KNILL-JONES, Roundstone, 2 School Green Road, Freshwater, Isle of Wight PO40 9AL.

A note on *Helicoverpa armigera* (Hb.) (Lep.: Noctuidae) in Cumbria

On 10 February 2002, my wife observed a noctuid caterpillar trotting across the carpet in the hall of our house here, in Grange-over-Sands. She called my attention to it and I duly collected the specimen. It was an elegant larva which I did not recognise – but I am no expert on larvae. It must have been introduced into the house in a bunch of anniversary flowers which had come from a local florist a few days previously. I kept it in a small jar with a crinkled-up tissue in the base and, not knowing what food to supply, I provided it with a few leaves of wild strawberry (a very useful plant for winter larvae). It fed a little on the leaves and then disappeared into the folds of the tissue on about 14 February.

I kept the jar on my study desk. Towards the end of March I took out the tissue and found a normal looking pupa therein. I left this on a bed of tissue in the jar and examined it daily. On 7 April, there was a moth in the jar, and this proved to be a female *H. armigera*. It was only after the emergence that I gave close attention to the pupal case and then found it had the two elongated spines which seem to be a character of the Heliothinae.

Enquiry of the florist regarding the provenance of the flowers was negative. Apparently they are obtained from an international market in Holland, which receives stock from all over the world.– NEVILLE L. BIRKETT, Beardwood, Carter Road, Grange-over-Sands, Cumbria LA11 7AG.

Larva of *Helicoverpa armigera* (Hb.) (Library photo)

A comparative study of early butterflies and moths in the Isle of Wight during 1997 and 2002

During 1991 (*Br. J. ent. nat. Hist.* **4**: 129-131) I reported on a comparison of early spring emergences of macro-moths in the years 1989 to 1991. Subsequent notes by me recorded other early occurrences of Lepidoptera (*Br. J. ent. nat. Hist.* **7**: 3-5; *Ent. Rec.* **107**: 251; *Ent. Rec.* **110**: 135). I now take the opportunity to report on a comparison of the first appearances of butterflies and moths in the Isle of Wight during the two years 1997 and 2002.

The first four months of both 1997 and 2002 were very similar in respect of the weather causing very early springs, which resulted in many of our butterflies and moths emerging very early. The rainfall in January for these two years was about average; February was above average for both years. Both Aprils were the sunniest since records began on the Isle of Wight in 1918, although it became wet and unsettled at the end of this month in 2002. Rainfall for April 1997 was 14.2mm and for 2002 it was 35.1mm (average 46.2mm).

Amongst the butterflies that emerge in the spring the Holly Blue *Celastrina argiolus* (L.) and Small White *Pieris rapae* (L.) were seen on 7 March 2002 compared to 20 March in 1997. The Green Hairstreak *Callophrys rubi* (L.) was observed on 9 April for both years and only one day separated the Grizzled *Pyrgus malvae* (L.) and Dingy *Erynnis tages* (L.) Skippers. The Small Heath *Coenonympha pamphilus* L. was nearly three weeks later in 2002 and the Common Blue *Polyommatus icarus* (Rott.) was a week earlier. There was no early record of the Duke of Burgundy *Hamearis lucina* (L.) for 2002, a butterfly that is becoming exceedingly rare at its old haunts on the Island. The first Large Skipper *Ochlodes venata* (Brem. & Grey) was seen at Wheelers Bay on 11 May 2002.

Two species in 2002 were exceptionally early. Chris Holland noticed three Brown Argus *Arica agestis* (D.&S.) feeding on Stitchwort *Stellaria nemorum* on 8 April at America Woods, Shanklin. This is an exceptionally early date and is probably the earliest ever sighting for the British Isles, although this awaits confirmation. The phenogram for this species given in *The Millennium Atlas of Butterflies in Britain and Ireland* (Asher et al., 2001), does not appear to show any record prior to the second half of April. I saw the Small Blue *Cupido minimus* (Fuessl.) on Afton Down on 23 April. This is also the earliest date that this species has been observed in the British Isles. It beats the record set in 1945 at Ballard Down, Dorset by just one day (Riley, *Entom.* **78**: 108). I saw about half-a-dozen of this species in 25 April and this locality usually returns the earliest date in Hampshire and the Isle of Wight. In 1997 I observed it on 27 April and in 1990 on 29 April.

Table 1 presents a list of the early emergent spring butterflies seen on the Island during 1997 and 2002.

Amongst the migrant butterflies the Red Admiral *Vanessa atalanta* (L.) was seen on New Year's Day at Parkhurst in 2002 and on 16 January at Gurnard in 1997. During 2002, a half-grown larva was found at Bonchurch on 28 March and must have been an example of winter offspring. The Painted Lady *Cynthia cardui* (L.) was first recorded on 23 March in 2002 and on 27 April in 1997, both on Afton Down. During

2002 there were three early sightings of the Clouded Yellow *Colias croceus* (Geoff.) – it was seen on 16 April on Brading Down, on Lake beach on 1 May and at St. Catherines on 2 May.

Table 1. Earliest recorded dates for butterflies on the Isle of Wight during the years 1997 and 2002.

	2002		**1997**	
Species	**Date**	**Locality**	**Date**	**Locality**
Holly Blue *Celestrina argiolus* (L.)	7.iii	Freshwater	20.iii	Freshwater & Gurnard
Small White *Pieris rapae* (L.)	7.iii	Ventnor & Gurnard	20.iii	Binstead & Brading
Speckled Wood *Pararge aegeria* (L.)	22.iii	Freshwater	27.iii	Freshwater
Green-veined White *Pieris napi* (L.)	29.iii	Gurnard	20.iii	Arrreton
Orange-tip *Anthocharis cardamines* (L.)	30.iii	Gurnard	27.iii	Gurnard
Large White *Pieris brassicae* (L.)	3.iv	Mottistone	10.iv	Freshwater
Wall Brown *Lasiommata megera* (L.)	4.iv	Adgestone	27.iv	Binstead
Brown Argus *Aricia agestis* (D.&S.)	8.iv	America Woods, Shanklin	27.iv	Afton Down
Green Hairstreak *Callophrys rubi* (L.)	9.iv	Afton Down	9.iv	Afton Down
Grizzled Skipper *Pyrgus malvae* (L.)	9.iv	Afton Down	10.iv	Afton Down
Small Copper *Lycaena phlaeas* (L.)	11.iv	Niton	9.iv	Newtown
Small Blue *Cupido minimus* (Fuessl.)	23.iv	Afton Down	27.iv	Afton Down
Dingy Skipper *Erynnis tages* (L.)	23.iv	Afton & Brading Down	22.iv	Brading Down
Common Blue *Polyommatus icarus* (Rott.)	23.iv	Whippingham	30.iv	Brading & Wheelers Bay
Pearl-bordered Fritillary *Boloria selene* (L.)	1.v	Parkhurst	29.iv	Parkhurst & Walters Copse
Glanville Fritillary *Melitaea cinxia* (L.)	3.v	Wheelers Bay	30.iv	Wheelers Bay
Small Heath *Coenonympha pamphilus* (L.)	8.v	Ventnor	21.iv	Brading Down

Turning to the moths, amongst the species which where several weeks early was the Double-striped Pug *Gymnoscelis rufifasciata* (Haw.) on 5 January at Freshwater. I have now taken this species in every month of the year, suggesting very strongly that it is now continuously brooded. I took a Pebble Prominent *Notodonta ziczac* (L.) on 30 March in 2002 compared to 11 April in 1997. There were several early reports of the Humming-bird Hawk-moth *Macroglossum stellatarum* (L.) with the earliest in

2002 on 11 February, at Ventnor, compared to 20 March at Freshwater, in 1997. It seems that this species may now overwinter as an adult in Southern England. The Puss Moth *Cerura vinula* (L.) on 15 April; the Spectacle *Abrostola tripartita* (Hufn.) 19 April and an exceptionally early Buff Ermine on 23 April (4 June 1997), all recorded at Freshwater, are all examples of early emergence. James Halsey recorded a striped Hawk *(Hyles livornica* (Esp.) on 28 March at Bonchurch in 2002.

Table 2 presents a list of the early emergent spring moths seen on the island during 1997 and 2002.

Table 2. Earliest recorded dates for moths on the Isle of Wight during the years 1997 and 2002.

	2002		**1997**	
Species	**Date**	**Locality**	**Date**	**Locality**
Double-striped Pug *Gymnoscelis rufifasciata* (Haw.)	5.i	Freshwater	2.iii	Freshwater
Silver Y *Autographa gamma* (L.)	17.iii	Freshwater	11.iii	Freshwater
Hummingbird Hawk-moth *Macroglossum stellatarum* (L.)	11.ii	Ventnor	20.iii	Freshwater
Purple Thorn *Selenia tetralunaria* (Hufn.)	23.iii	Binstead	29.iii	Freshwater & Binstead
Red-green Carpet *Chloroclysta siterata* (Hufn.)	25.iii	Freshwater	27.iii	Binstead
Nut-tree Tuffet *Colocasia coryli* (L.)	29.iii	Binstead	3.iv	Binstead
Pebble Prominent *Notodonta ziczac* (L.)	30.iii	Freshwater	11.iv	Freshwater
Swallow Prominent *Pheosia tremula* (Cl.)	1.iv	Binstead	3.iv	Freshwater
Scorched Carpet *Ligdia adustata* (D.&S.)	3.iv	Binstead	14.iv	Binstead
Lesser Swallow Prominent *Pheosia gnoma* (Fabr.)	4.iv	Binstead	14.iv	Binstead
Bright-line Brown-eye *Laconobia oleracea* (L.)	14.iv	Binstead	25.iv	Freshwater
Puss Moth *Cerura vinula* (L.)	15.iv	Freshwater	3.v	Binstead
Spectacle *Abrostola tripartita* (Hufn.)	19.iv	Freshwater	10.v	Freshwater
Red twin-spot Carpet *Xanthorhoe spadicearia* (D.&S.)	20.iv	Afton Down	21.iv	Binstead
Brimstone *Opisthograptis luteolata* (D.&S.)	21.iv	Binstead	9.iv	Binstead
Maidens Blush *Cyclophora punctaria* (L.)	22.iv	Binstead	25.iv	Binstead
Buff Ermine *Spilosoma lutea* (Hufn.)	23.iv	Freshwater	4.vi	Freshwater
Mullein *Shargacucullia verbasci* (L.)	25.iv	Freshwater	12.iv	Freshwater

Acknowledgements

I should like to thank Dave Wooldridge for reading and commenting on the manuscript of this note and Mr B. Angell, Mr D. A. Britton, Mr A. Butler, Mr S. Colenutt, Mr B. Goater, Mr J. Halsey, Mr C. Holland, Mr F. Joiner, Mr I. Kimpton, Mrs D. Peach, Mr I. Rippey, Mr J. Rowell and Mr B. J. Warne for their useful records and information which has helped me in writing it.

– S. A. KNILL-JONES, Roundstone, 2 School Green Road, Freshwater, Isle of Wight PO40 9AL.

The Forester *Adscita statices* L. (Lep.: Zygaenidae) in Windsor Great Park, Berkshire

A single Forester moth was noted in passing during a field session focusing on the famous ancient trees of Windsor Great Park and Forest (SU 97), as part of a conference on saproxylic beetles, 27.vi.2002. It was flying in an area of ungrazed and uncut grassland that was full of one of its foodplants, common sorrel *Rumex acetosa*. Areas of rough grassland such as this are increasingly being included in the conservation plan being developed by the Crown Estates. The species is currently known from very few sites in the county – and the south east of England generally – and there appear to be no historic records for this site.– K. N. A. ALEXANDER, 14 Partridge Way, Cirencester, Gloucestershire GL7 1BQ.

New Records of the Bird's Wing *Dypterygia scabriuscula* L. (Lep.: Noctuidae) in Devon

I was greatly interested in a moth list I recently received from Stephen Hatch, summarising his garden records for the last few years. Amongst the usual species I noted a record for *Dypterygia scabriuscula*. On getting more information from Stephen, he informed me that two specimens were captured using a Heath trap on 18 July 1999 at Torrington, O. S. grid reference SS 495188. This is quite a late date for the species, but as it is quite easily identifiable I was intrigued. In *The Moths of Devon* (McCormick, 2001) there is one post-1970 record in VC3 at Teignmouth, and interestingly no old VC4 records.

I asked Stephen if he would re-visit the site this year, which he did on 10 May 2002, two months prior to his earlier record. He was very pleased to report that two further individuals were caught at m.v. light. On this occasion he was able to get some photographs to confirm the identity beyond doubt. These constitute new VC4 records, and put the Great Torrington area in amongst the best Devon localities, since Scarce Merveille-du-Jour *Moma alpium* Osb. and The Triangle *Heterogenea asella* D. & S. have also been recently rediscovered in this area. The habitat is apparently steep-sided, south-facing, bracken-covered slopes sheltered from the wind with a high canopy of oaks and poplar.– PAUL BUTTER, 2 Gulpit Cottage, Glasshouse Lane, Exeter EX2 7BZ.

The Beautiful Snout *Hypena crassalis* (Fabr.) (Lep.: Noctuidae) taken in Hertfordshire with a note on the doubtful status of some alleged larval host plants

During a recording trip with the Herts Moth Group to Patmore Heath, near Bishops Stortford, Hertfordshire on 29 June 2002, we were surprised that almost the very first moth to arrive at the vertically mounted sheet was a female Beautiful Snout *Hypena crassalis*. Sadly, initial thoughts that this was a new species for the county were dashed when reference to the Herts Moth Database the morning after showed that a single female had been recorded in a Rothamsted Insect Survey light trap on the Rothamsted Estate in Harpenden, on 13 July 1985 (Riley. *Ent. Rec.* **98**: 213). Interestingly, Riley notes this as being in the Geescroft trap (trap 22) in that note; later, in a wider review of records made on the Rothamsted Estate (Riley. *Ent. Rec.* **111**: 71-94), he records trap 26 as the source. An even earlier Hertfordshire example was recorded by the late Ian Lorimer at Totteridge in 1967 (Plant, 1983. *Larger Moths of the London Area*. LNHS).

Riley noted, in the original publication, that the larval foodplant (Bilberry – *Vaccinium myrtillus*) was absent from the Harpenden area and that the nearest colony of the moth was at Aspley Heath in Bedfordshire (O. S. grid reference TL 925352). According to Trevor James, the Hertfordshire botanical recorder, bilberry is apparently extinct as a native wild plant in Hertfordshire; it was last recorded before 1960 from the Chipperfield area, and before that it was present at Oxhey Woods and a couple of other sites, but never common.

According to *Moths and Butterflies of Britain and Ireland*, volume 10 (Harley Books, 1983) the larvae may sometimes feed on *Erica tetralix and E. cinerea*. Though these statements are not supported by a literature reference it seems likely that Maitland Emmet lifted the information from Scorer (1913. *The entomologist's log-book and dictionary of the life histories and food plants of the British macro-Lepidoptera*), which simply records the information without comment. Trevor James informs me that "the two *Erica* species are also rare in the county as native, but *E. tetralix* has been recorded since 1988 at Patmore Heath! However, it has not been seen recently, and was never abundant! *Erica cinerea* has not been seen there at all, and only exists, in Hertfordshire, on Bricket Wood Common".

The Natural History Museum's host plants website at http://www.nhm.ac.uk /entomology/hostplants, maintained by Gaden Robinson, also lists *Calluna* and even *Urtica* as larval foodplants. The original source of this data is apparently Beck (1960. *Die Larval Systematic der Eulen*, p. 352), which I have not seen. Martin Honey very kindly informs me that Ebert (1997. Die Schmetterlinge Baden-Würtembergs 5: 431-433) lists only *Vaccinium myrtillus* as the foodplant, but also gives an earlier mention of *Calluna* and *Urtica*, that of Hering (1881 – but no reference given).

It seems to me that what we have here is yet another example of successive authors copying what has gone before without checking if the information given is correct (though this is no bad reflection on the Natural History Museum website

which merely aims to summarise available data). It is apparent that the reference to *Erica* and *Urtica* as foodplants stems from a single source as long ago as 1881, doubtless incorrect. There does not seem to be any other evidence of a food plant other than *Vaccinium* for any part of the Palaearctic region, at least not in the past hundred years. The opportunity is taken to remind readers that a caterpillar at rest on a plant does not necessarily mean that it is feeding on that plant; if it did, there would be an awful lot of arboreal moths breeding on my lawn!

It is possible, of course, given the socio-economic nature of the area where the moth was captured, that someone could have brought some wild bilberry plants into their garden and perhaps introduced a pupa with them. Alternatively, it is equally possible that the individual that we caught could be a wanderer from much farther afield; Riley presumed his example to be a migrant. We shall probably never know!

I am grateful to the Herts and Middlesex Wildlife Trust, who manage Patmore Heath as a nature reserve and who are currently funding my research into moths on this and other nature reserves in the county. Trevor James provided valuable botanical information. Emil deMaria (University of Hertfordshire) brought to my attention the existence of The Natural History Museum's host plants web site. I am also most grateful to Martin Honey and Gaden Robinson at The Natural History Museum for their helpful comments and to Martin in particular for finding and checking literature references for me.– COLIN W. PLANT, 14 West Road, Bishops Stortford, Hertfordshire CM23 3QP (E-mail: colinwplant@ntlworld.com).

FOOTNOTE: Since writing this note, Andrew Wood has reported capturing another single female example of this species at Hertford, a week later on 7th July 2002. This surely lends credence to the notion that these examples are wanderers/migrants, rather than overlooked residents.

Strophedra weirana (Douglas) (Lep.: Tortricidae) new to West Suffolk (VC26)

A planned trapping session in the Brecks, just south of Thetford at Kings Forest, with the Suffolk Moth Group on 17 May 2002 had to be rather hurriedly diverted to one of the main large car parks due to a brisk wind cutting through the proposed area of Breck grassland. The habitat had now changed drastically to beech, pine and gorse. A fair night was had until rain started at just gone midnight. Both myself and Tony Prichard took a small, entirely dark tortricoid moth from the depths of one of the Skinner traps. Thinking it might be one of the *Cydia* species, I retained it for further inspection via genitalia examination. Once under the microscope it proved to be a male *Strophedra weirana*, a species that frequents beech woods. This proved to be new to West Suffolk (VC26). It is known from the surrounding vice counties, but in small numbers. The only other Breckland record is from West Harling Heath, West Norfolk (VC28), where one was taken in taken in 1994.

Thanks to John Langmaid for confirming this species as new to VC26 and Ken Saul for the other Breckland record.– JON CLIFTON, Kestrel Cottage, Station Road, Hindolveston, Norfolk NR20 5DE.

Xestia rhomboidea (Esper) (Lep.: Noctuidae) – a third Derbyshire record

On the night of 27 August 2001, a single, worn male *Xestia rhomboidaria* was taken in a 125W m.v. trap sited in a garden in Bakewell, Derbyshire (VC57, O.S. grid reference SK 218688). The garden backs onto the River Wye and an area of open parkland with scattered alders and willow, but nothing resembling dense woodland. The surrounding area is the town of Bakewell with typical suburban gardens amongst the tarmac and concrete. However there are at least two areas of woodland about one kilometre (3/4 mile) away from the trapping site.

Interestingly the only other Derbyshire record that I could locate, initially, was also from Bakewell, over 100 years ago on 17 July 1885, by R. H. Fuller (see Harrison, F. and Sterling, M. J., 1986. *Butterflies and Moths of Derbyshire,* Part 2). On writing to Ian Viles, moth recorder for Derbyshire, it transpired that there has been one further record in 1997, on 9 August by B. L. Stalham, to m.v. light at Matlock and published in the Derbyshire and Nottinghamshire Society Journal in 1998.

These observations raise the possibility that the species could be resident in the area, Matlock being 11-12 kilometres (7-8 miles) from Bakewell. Perhaps closer inspection of the surrounding woodland might reveal a hitherto unsuspected population of this *Biodiversity Action Plan* species.

My thanks to Ian Viles for providing the information regarding the Matlock record.– JULIAN H. CLARKE, Dormers Wood, Cuttinglye Road, Crawley Down, West Sussex RH10 4LR (E-mail: avery.clarke@virgin.net).

Grapholita tenebrosana (Duponchel, 1843) (Lep.: Tortricidae) in Glamorgan

On 15 September 2001, while selecting species to target for an afternoon searching for larvae and leaf-mines, I noticed Arthur Smith's marvellous illustration of the larval habits of *Grapholita tenebrosana* in the now out of print *British Tortricoid Moths* Vol. 2, Plate 19 (Bradley *et al,* 1979). According to the database assembled by the Glamorgan Moth Recording Group, this species had not been noted in Glamorgan (VC41) before, but with the abundance of both wild and cultivated *Rosa* species in the county, there seemed no obvious reason why it should not be present. An hour later, by the River Tawe in Swansea, my attention turned to the hips of a cultivated *Rosa* sp. that had been planted alongside the footpath by the city council. To my surprise, the first two hips I found that had indications of entry holes and raised areas of darkened skin proved to contain well-grown larva of *tenebrosana.* I brought this discovery to the attention of county moth recorder Barry Stewart and, on 20 September, he found five larvae of *tenebrosana* in hips of *Rosa canina* at Brocastle, near Bridgend. Further larvae were found by David Gilmore at Lavernock Point, south Glamorgan, on 4 October and Barry found mined hips and larvae in numbers at Mumbles Hill on 9 October. Hips apparently recently vacated by larvae were noted at Manselfield on 15 October by Barry. The latter two sites lie between Swansea and Gower in west Glamorgan. All five sites where *tenebrosana* has been

recorded so far are close to the coast, but no effort has yet been made to look for it inland. Though Bradley *et al* (op.cit.) state that *tenebrosana* "occasionally comes to light" this either hasn't happened or the adult moths have not been recognised in Glamorgan to date. The largely day-flying habit of this species has probably contributed to it being overlooked in VC41 until now. Incidentally, *tenebrosana* is not listed in G. A. Neil Horton's checklist for VC35, *Monmouthshire Lepidoptera* (1994. Comma International Biological Systems), but it seems likely that if it was searched for it would prove to be present in that county as well.– MARTIN J. WHITE, 8 St. Nicholas Square. Maritime Quarter, Swansea SA1 1UG.

Coleophora albicosta (Haw.) (Lep.: Coleophoridae) new to Leicestershire

I recently received two *Coleophora* specimens, sent to me by Mark Skevington, which he had caught in his garden at Whetstone, Leicestershire (VC55) on 1 and 16 May 2002. They superficially resembled *C. albicosta*, but knowing they would be a new county record I decided to dissect them; they both turned out to be females. Both were taken at m.v. light.

Many thanks to John Langmaid who confirmed they were indeed new to VC55. — JON CLIFTON, Kestrel Cottage, Station Road, Hindolveston, Norfolk NR20 5DE (E-mail: jon.clifton@btinternet.com).

Eudonia alpina (Curtis) (Lep.: Pyralidae) at low altitude in Scotland

Eudonia alpina is a scarce and localised moth in Britain occurring from West Perthshire northwards to Shetland. It is listed as Nationally Notable category A by Parsons (1993, *A Review of the Scarce and Threatened Pyralid Moths of Great Britain*, JNCC, Peterborough). Typically this moth is thought of as a high mountain species on the Scottish mainland. Bierne (1952. *British Pyralid and Plume Moths*, Frederick Warne & Co. Ltd., London) stated that it occurs above 3000 feet (c.900 m) whilst Goater (1986. *British Pyralid Moths*, Harley Books, Colchester) gives 700 metres as the lower altitudinal limit.

On 31 May 2001, whilst carrying out fieldwork at an altitude of 320 metres in Glenmore Forest Park, near Aviemore, Invernesshire, I disturbed and caught a pyralid that I subsequently identified as *E. alpina*. The following day I found two more at the same site with a further individual on 3 June. These were all noted incidentally to the main work (vegetation sampling) and it is quite possible that many more were present at the site. I last visited the site on 14 June when half an hour of dedicated searching produced one final individual. Although I carried out fieldwork almost daily between 30 May and 14 June in various parts of Glenmore the species was not recorded away from this one site and all moths were found within approximately 100 metres of each other.

Not only were these records from a lower altitude than previously published for this species but they were also from an apparently atypical habitat. Instead of the usual "grassy ridges and lichen covered summits" (Bierne, *op. cit.*) these records are all from a clearing that was formerly planted with Sitka Spruce *Picea sitchensis* and is now a patchwork of boggy and drier ground. The dominant vegetation includes a luxuriant cover of Soft Rush *Juncus effusus*, *Polytrichum* sp., *Sphagnum* sp., Yorkshire Fog *Holcus lanatus*, and Common Cotton Sedge *Eriophorum angustifolium* along with patches of Heather *Calluna vulgaris*. An immediately adjacent area, from where the final specimen was secured, is dominated by *C. vulgaris*.

Strange though these records appear to be, they are not actually the first from low altitudes in the Aviemore area. Among records held by the Pyralid and Plume Recording Scheme are a series from an altitude of about 240 metres in the Coylumbridge and Granish Farm areas, near Aviemore in 1993 (D. H. Houghton) and 1995 (R. F. McCormick). The close proximity of these locations to Glenmore (the most distant sites are less than 6 km apart) suggests the intriguing possibility of continuous establishment in the area.

A further point of interest is the remarkable coincidence of dates between all these records. With the exception of the last individual in 2001, all were found between 28 May and 3 June. At higher altitude sites the species flies more usually in mid June or early July (Mark Young pers. comm.). Presumably emergence can take place earlier at lower altitudes as there is less risk of the moths encountering snow or cold conditions.

Interestingly, I also encountered another typical upland pyralid species, *Udea uliginosalis* Stephens, at low altitudes in 2001. This species is normally only found over 350 m and especially above 600 m (Bierne, *op. cit.*; Goater, *op. cit.*). However two were attracted to m.v. lights at an altitude of just 250 m at Invertromie Meadow, Insh Marshes, on 28 July 2001 at a joint BENHS/RSPB meeting. During August I caught a further three individuals in Deeside, Aberdeenshire, at relatively low altitudes including one at Dinnet Muir at 180 m.

Population dynamics of montane species are notoriously erratic and years of high populations could lead to dispersal into less favoured areas. Indeed *U. uliginosalis* was noted to be frequent on Carn Ban Mòr in July 2001 (D. Green, 2001. pers. comm.) and such an explanation might account for the widespread nature of the species around that time. However, the close proximity of records of *E. alpina* in the Aviemore area suggests that populations of this species may persist for some years at lower altitudes and that other, unidentified factors may be more important in shaping the distribution.

Thanks to Forest Enterprise for allowing fieldwork to take place at Glenmore, Tony Davis for supplying records and Mark Young for commenting on a draft of this note.–NICK A. LITTLEWOOD, University of Aberdeen, Dept. Plant and Soil Sciences, Cruickshank Building, St. Machar Drive, Aberdeen AB24 3UU (E-mail: n.littlewood@abdn.ac.uk)

Phyllonorycter leucographella (Zeller, 1850) (Lep.: Gracillariidae), newly arrived in Scotland

Phyllonorycter leucographella (Zell.) has recently arrived in Edinburgh. The early upper-side blister-mines of this species were found on the leaves of a long-established *Pyracantha coccinea* bush in Stockbridge (O.S. Grid NT 2474), Edinburgh on 18 January 2002. A few mines were collected and brought indoors. They continued to develop and subsequently produced two imagines on 24 February. In the south of England this species is continually brooded – the same appears to be the case in Scotland. Further mines were found on the opposite side of Edinburgh at Sciennes (NT 2674) on 12 February 2002. The few mines collected subsequently produced imagines on 29 March. I am fairly sure that this species has arrived in Edinburgh very recently, because in this latter site, the large stand of bushes was planted about ten years ago and I have inspected it regularly over this period in anticipation of *leucographella*'s arrival. Furthermore, on 17 April, a single early mine was found on a *Pyracantha* bush at Blackford (NT 2670), about one mile from the previous site. In spite of careful searching, no further mines were found. It appears that once the invasion starts colonisation spreads rapidly.– KEITH P. BLAND, National Museums of Scotland, Chambers Street, Edinburgh EH1 1JF.

Phthorimaea operculella (Zeller) (Lep.: Gelechiidae) new to Essex

When I was asked to run a public moth trapping event for the local village at my in-laws in Great Bentley, half way between Colchester and Clacton-on-Sea, I began to wonder what possibly could be worse than stuck in the middle of England's largest village green with the local boy-racers running up and down after closing time! I agreed, with thoughtful reservations, as I knew the lady responsible for asking and it *was* the night before National Moth Night (which gave me an opportunity to get on the north Essex coast as we were staying for the weekend). The night of 10 August 2001 was a clear and cold one and with just two traps set amongst a young plantation and a crowd of about twenty locals we began to count the Large Yellow Underwings and hope for a hawk-moth to come in and keep them happy. As it was, we did have a good time with no problems recording 40 species by midnight. At the last trap round I pocketed two moths, one a pug and one a gelechiid. The night was forgotten until the following winter when I started to get around to a few dissections, leaving the Great Bentley ones until pretty much the last to do. This is when the night turned out to be much better than at first thought! The pug was first to hit the KOH and turned out to be a male Golden-rod Pug *Eupithecia virgaureata* Doubleday, the first in Essex since 1995 and only the second post 1990 record. The second was even better, a male *Phthorimaea operculella*, the first record for Essex.

Abroad this moth can be a pest species with potato crops and in the UK is known from several counties surrounding the London area. Many thanks to Brian Goodey, Essex Moth Recorder, for his speedy response in letting me know of its rarity in Essex.– JON CLIFTON, Kestrel Cottage, Station Road, Hindolveston, Norfolk NR20 5DE (E-mail: jon.clifton@btinternet.com).

The macro-moths of Werrington, Peterborough - additions to the species list as a result of light-trapping and other observations from 1993-2000

Whether you consider the new Millennium started on 1 January 2000 or 1 January 2001, the twentieth century is now definitely over. The new year class for the National Moth Recording Network is 2000 onwards, the previous year class having run from 1 January 1980 to 31 December 1999. As we are now definitely in a new era, I decided it was time to review and update the moth list for my garden. Those of you with good memories may recall that I have previously reported the results of recording in my garden (Butterfly Conservation News **51**: 59-62 (1992); **52**: 48-56 (1993); **54**: 52-61 (1993); *Ent. Rec.* **106**: 91-100 (1994)). These reports covered the first two recording seasons in my present garden, at which time the list of macro-moths stood at 248 species. The O.S. grid reference. of the garden is TF 164034.

Regular trapping has continued each year from 1993 to 2000 and a further 51 species have been added. These are listed below. The interesting thing is that the vast majority have only occurred in one or two of the eight years and almost invariably as singletons. With a few exceptions, which are labelled "Likely Resident", the majority are probably not breeding in the garden. However, with the exception of the species known to be annual immigrants to Britain, all the species are very likely, if not certainly, breeding in the 10 kilometre square in which the garden sits. In most cases I have recorded these species in larger numbers in woodland on the Milton Estate, within 1 km of the trap, or in other habitats, such as the dykes, equally close to the garden, and it is easy to imagine them wandering or being windblown the short distance to the trap. The habitats available near the garden were described in the first part of the earlier report (Butterfly Conservation News **51**: 59-62).

The list of additions includes one Red Data Book species (Four-spotted moth) and two Nationally Scarce ones. I have tracked down the breeding grounds of the Four-spotted, which are within 1 km by the railway line, and I have studied the colony in detail. It is just possible that the moth bred for a couple of generations in our garden, based on the fact that I trapped it for three generations in a row but have not had it again since. At the time of the captures we had just cleared a large bonfire site and there was much almost bare ground with the larval foodplant (Field Bindweed) sprawling across the earth and the summers were hot and dry, which are the conditions this moth favours. The plant is still quite common in the garden, but now the sward in this area is more lush and only cut a couple of times a year.Since writing this, three more individuals have been light-trapped in the garden, all in 2001, on 26 May (one immaculate male), 27 May (one immaculate female) and 11 August (one male in good condition). The moth has not been seen visiting the ample supply of suitable nectar plants in the garden (which includes favourites of this moth: Oxeye Daisies and Field Bindweed). The garden was no more suitable for breeding in 2001 than the previous year.

The Blue-bordered Carpet is now regular in the garden and this coincides with my planting in 1992 of a new hedge of mixed native broadleaves, including Blackthorn (one of its larval foodplants). The hedge has grown well since the planting, and I

have beaten some interesting larvae from it, including the Vapourer and the Herald, but I have not yet confirmed the Blue-bordered Carpet as larvae. The Mullein moth is definitely breeding. In 1992 I planted both Aaron's Rod Mullein *Verbascum thapsus* and Dark Mullein *V. nigrum*, both have come up annually since, but it took until 1999 for the moth to find them. In that year I was rewarded with eight larvae on two flowering spikes of the *V. thapsus,* first noted on 13 June, and there were larvae there again in 2000. Only a couple of the other species turn up more or less annually, suggesting that they are breeding, yet were missed in 1991 and 1992. Put another way, most of the resident species in the garden had been detected after two years of trapping once or twice a week throughout the year. The only puzzling species is the Bird's-wing. I would like to know where this is breeding, because I usually associate it with slightly heathy ground. I have had it twice now. Probably it comes from by the railway line where I have found larvae of the Four-spotted moth, Oak Eggar and Emperor moth. There are some surprise omissions. I have still never had the Lesser Swallow Prominent for example, even though we have a birch tree in the garden and others in the area. The moth is frequent in the woods.

Sadly, my records reveal that a few of the species I recorded in 1991 and 1992 appear no longer to be present. Most notable among these is the Garden Tiger moth. I recorded singletons in 1991 and 1992 but have not seen it since, in spite of some intensive light-trapping during its flight period specifically to try and see it. Sometimes a moth can go absent from a garden trap and still be breeding quite near by, but this decline of the Garden Tiger mirrors the results of a number of other garden trappers, which has alerted us to the fact that there seems to be a large-scale decline of the species underway in many inland parts of southern Britain, dating from about the mid 1980s onwards. The decline has been documented by Conrad, Perry, & Woiwod, (2001. An abundance-occupancy time-lag during the decline of an arctiid tiger moth. *Ecology Letters* 2001. **4**: 300-303 & Conrad, Woiwod, & Perry (in press. Long-term decline in abundance and distribution of the Garden Tiger Moth (*Arctia caja*) in Great Britain. *Biological Conservation*). It illustrates the value of light-traps in environmental monitoring. There are many ways in which the data I have collected from the garden over the last decade could be analysed. The 1990s produced some very early spring emergences for example. If only I had data from the 1980s and 1970s at this house for comparison. But more detailed analysis will have to wait for another winter when I have more time. In the meantime, I hope this article encourages readers to keep full records of their catches and to keep running their light-traps frequently, even when it seems that you are adding few new species per year.

John Ward, County Macro-moth Recorder for Northamptonshire, has commented that the 1998 Ruddy Highflyer record is the only post 1980 VC 32 record for the species. He adds that he has not been able to find any records of the moth in the county other than in the Soke and prior to the present record these consisted of those taken by S. W. P. Pooles (18.v.1933 at Flag Fen Peterborough, and three on 28.v.1967 at Borough Fen Lincs. There is some confusion as to whether this latter is connected to Borough Fen Decoy in TL 20 that used to be visited by Pooles, Pilcher and others around that time.

Table 1. The 51 species additional to the lists published for 1991 and 1992, making a total 299 species of macro-moths recorded from the site between 1991 and 2000.

Ghost Swift *Hepialus humuli* – 29 March 1997 (larva only)

Drinker *Euthrix potatoria* – 11 July 1994 (1, female)

Lappet *Gastropacha quercifolia* – 30 June 1993 (1, very fresh)

Peach Blossom *Thyatira batis* – 26 July 2000

Maiden's Blush *Cyclophora punctaria* – 20 July 2000

Large Twin-spot Carpet *Xanthorrhoe quadrifasciata* – 6 August 1998 (1, somewhat worn)

Chevron *Eulithis testatal* – 9 August 1993 (1)

Spinach *Eulithis mellinata* – 19 June 1988 (3)

Blue-bordered Carpet *Plemyria rubiginata* – 3 July 1994 (2), 1999, 2000 (Likely resident on Blackthorn in new hedge)

Ruddy Highflyer *Hydriomena ruberata* – 31 May 1998 (1, retained)

Small Waved Umber *Horisme vitalbata* – 31 July 1997 (1)

Autumnal Moth *Epirrita autumnata* – 15 October 1995 (1, confirmed)

Slender Pug *Eupithecia tenuiata* – 19 July 2000 (1)

Foxglove Pug *Eupithecia pulchellata* – 1993

Pinion-spotted Pug *Eupithecia insigniata* – 30 April 1999 (1, retained) (Nationally Scarce)

Freyer's Pug *Eupithecia intricata arceuthata* – 1992, 1993, 1996,1998, 2000 (Resident in the garden on conifers)

Common Pug *Eupithecia vulgata* – Annually 1992-2000 (Resident)

Grey Pug *Eupithecia subfuscata* – 14 & 19 June 1998 (1 each), 10 & 17 June 2000.

Plain Pug *Eupithecia simpliciata* – 1 August 1997 (1, retained)

Lesser Treble-bar *Aplocera efformata* – 22 August 1997 (1)

Scorched Wing *Plagodis dolabraria* – 8 June 1996 (1)

Lilac Beauty *Apeira syringaria* – 3 July 1994 (2)

Large Thorn *Ennomos autumnaria* – 31 August 1998 (1 male, after rain arrived) (Nationally Scarce)

Satin Beauty *Deileptinia ribeata* – 4 August 1994 (1)

White Pinion-spotted *Lomographa bimaculata* – 31 May 1998 (1)

Humming-bird Hawk-moth *Macroglossum stellatarum* – 10.ix. 1998 (1) (Migrant)

Vapourer *Orgyia antiqua* – 1998, 2 August 1999 (1 male in light trap) (Now breeding on new hedgerow)

Scarce Footman *Eilema complana* – 19 July 1995 (1), 24 July 1997 (1)

Dark Swordgrass *Agrotis ipsilon* – 25 September 2000 (Migrant)

Pearly Underwing *Peridroma saucia* – 14 October 2000 (Migrant)

Shears *Hada plebeja* – 9 June 1993 (1)

Dog's Tooth *Lacanobia suasa* – 17 August 1996 (1)

Campion *Hadena rivularis* – 18 May 1993 (1)

Mullein *Shargacucullia verbasci* – 13-17 June 1999 and in 2000 (Now resident)

Merveille Du Jour *Dichonia aprilina* – 15 October 1994

Alder moth *Acronicta alni* – 25 May 1992 (1), 23 May 1995 (1), 15 May 2000

Copper Underwing *Amphipyra pyramidea* – 1996, 1997, 4 August 2000

Old Lady *Mormo maura* – 17 August 1996 (1), 1 September 1998 (1, very worn)

Bird's Wing *Dypterygia scabriuscula* – l June 1993 (1), 11 July 1998(1)

Small Angle Shades *Euplexia lucipara* – 13 & 19 June 1993 (1 each)

Olive *Ipimorpha subtusa* – 14 August 1993 (1), 19 July 1995 (2), 28 July 1998 (1), 3 August 1999 (1), 13 July 2000 (1) (Likely resident)

Small Wainscot *Chortodes pygmina* – 29 July 1997(1)

Twin-spotted Wainscot *Archanara geminipuncta* – 29 July 1997 (1), 2 August 1999 (1)

Fen Wainscot *Arenostola phragmitidis* – 15 July 1992 (1), 30 July 1995 (1), 20 July 1998 (1), 30 July 2000 (1)

Treble Lines *Charanyca trigrammica* – 8 June 1996 (1), 19 & 26 May 1997 (1 & 2)

Marbled White-spot *Protodeltote pygarga* – 1999, 2000

Cream-bordered Green Pea *Earias clorana* – 8 & 9 June & 2 July 1993 (1,1 & 2), 3 July 1994 (2), 19 June 1998 (1)

Green Silver-lines – *Pseudoips prasinana britannica* 19 June 1998 (1)

Beautiful Golden Y *Autographa pulchrina* – 6 June 1992 (1), 3 July 1994 (1), 19 July 1995(1)

Four-spotted Moth *Tyta luctuosa* – 19 August 1993, 17 June 1994 & 4 August 1994 (Red Data Book species)

Straw Dot *Rivula sericealis* – 4 August 1994 (1), 2 July 1999 (1)

– PAUL WARING, 1366 Lincoln Road, Werrington, Peterborough PE4 6LS (E-mail: paul_waring@btinternet.com).

More on *Gastrophysa viridula* (De Geer) (Col.: Chrysomelidae) in south-east England

Having read so much on the apparent rarity of *Gastrophysa viridula* in Kent and Sussex during the past couple of years it may be pertinent to record here that there is yet another site in the extreme south-east corner of the British Isles where the species has been found. On 5.viii.1986, whilst recording along the eastern tow-path of the River Stour at Stodmarsh NNR (O. S. grid reference TR 224625, VC15), I swept a substantial number of adults from a small patch of damp mud colonized by *Polygonum amphibium*. An examination of the plant revealed numerous larvae and some of these were reared to adults a short while later.– LAURENCE CLEMONS, 14 St. John's Avenue, Sittingbourne, Kent ME10 4NE.

Cheilomenes lunata – a correction

I was interested to read Paul Mabbott's note in this journal (*antea*, 1221-122) concerning the ladybird beetle *Cheilomenes lunata*. One minor point: he lists Chris Raper's record for Didcot as being in VC23 (Oxfordshire), but in fact Didcot is in VC22 (Berkshire), although it is indeed in the modern administrative county of Oxfordshire.– MARTIN HARVEY, 10 Kiln Ride, Upper Basildon, Berkshire RG8 8TA.

The generic names of the British Scarabaeoidea (Coleoptera) explained

Following my recent attempt to elucidate the names of our carabid genera, the Scarabaeoidea (or Lamellicornia) present themselves as a suitable assemblage for like treatment. The latest check-list by Lott, Duff, & Mann (2002) is followed. Again, the language of derivation is Greek, with only three exceptions.

Lucanus:	an inhabitant of Lucania, a district of southern Italy.
Dorcus:	from *dorcas*, a gazelle (whose image of lithe and nimble grace is not readily evoked by this sluggish, robustly-built insect).
Sinodendron:	destroyer of trees, or tree destroying.
Platycerus (extinct):	broad-horned, with reference to the antennal club.
Trox:	formed from a root meaning "to gnaw", stem trōg.
Odonteus:	from *odont-* "tooth", a barely adequate term for the male's cephalic horn.
Typhaeus:	for *Typhöeus*, "the smoker", name of a mythical giant. See *Ent. Rec.* **109**: 42.
Anoplotrupes:	based on the next with *anoplo-* "unarmed" in place of *geo-*.
Geotrupes:	burrower in the ground.
Trypocopris:	"dung burrower", cf. *Geotrupes* and *Copris*.
Aegialia:	frequenting shores or river banks.
Psammoporus:	burrowing, or making passages, in sand. (Cf. *Psammodius*).
Heptaulacus:	having seven furrows, with reference to the elytral striae.
Euheptaulacus:	*eu* "well" is here simply an intensive prefix (see above).
Aphodius:	apparently "off the path or track"; not very clear.
Oxyomus:	sharp shoulder (i.e. humeral angles; hardly noticeable in our species).
Saprosites:	(eater of) rotting or rotten food.
Psammodius:	based on *Aphodius* with *psammos* "sand" as the first element.
Brindalus:	either an arbitrary formation, or based on a proper name.
Diastictus:	pricked (cf. stigma), i.e. punctate, throughout.
Pleurophorus:	bearing side-pieces.
Onthophagus:	eating, or eater of, dung.
Copris:	dung beetle, scarab.
Serica:	silky. Silk was a product of the Seres or Chinese.
Omaloplia (for *Homaloplia*):	simple, i.e. unarmed, plus *Hoplia*.
Amphimallon:	enveloped (*amphi* = around) in a fleece.
Melolontha:	the ancient Greek name of the cockchafer.
Polyphylla (extinct):	many leaves, i.e. antennal lamellae.
Hoplia:	armed, from the well-developed hind tarsal claws of male.
Phyllopertha:	destroyer of leaves or foliage.
Euchlora:	well greened, from the green lustre usually apparent.
Oxythyrea:	sharp shield. Not very clear, but may refer to the scutellum.
Cetonia:	origin obscure, not classical; cf. French *cétoine*.
Protaetia:	first cause. Burmeister seems to have been in philosophical mood when he thought up this name
Gnorimus:	notable, famous; or grand, noble (cf. *G. nobilis*).
Trichius:	hairy.

–A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

Hister quadrimaculatus L. (Col.: Histeridae) in north-west Kent

Apropos of the record of this now rare beetle in Hampshire (J. A. Owen, 2002. *Coleopterist* **11**(1): 25 – 26), I should perhaps mention the occurrence of two specimens at different times on Stoke Marshes, Isle of Grain, north-west Kent: one by myself under sheep's wool mixed with dryish dung, late May 1935, and the other by G. H. Ashe under much the same conditions in June 1950. The previous occurrence in the Thames Estuary area was of plenty at Iwade, near Sittingbourne, in flood rubbish (J. J. Walker) in the first decade of the century. No red markings are visible on my specimen.– A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

Tachys parvulus (Dejean) (Col.: Carabidae) probably widespread in urban London, but you have to know how and where to look!

In a note in this journal, ten years ago, R. Colin Welch suggested that "perhaps closer examination of the man-made environment will reveal further locations for *Tachys parvulus*" (*Ent. Rec.*; **104**: 81-82). He had reported this elusive beetle from a path near his house in Northamptonshire and a paved area in a Bedfordshire garden. The implication was that *Tachys parvulus* might be a patio species. I can now reveal that, in fact, it is a roof species!

On two consecutive days, I found several specimens of *Tachys parvulus* on three different "eco-roofs" in two different vice-counties in urban London. They were at: the Calthorpe Centre, Grays Inn Road (TQ 307826), one specimen, 27.v.2002; Tower Hamlets Park Cemetery Visitor Centre (TQ 367824), four specimens, 27.v.2002; Canary Wharf (TQ 374804), one specimen, 28.v.2002 – all VC21 Middlesex. All were found using a suction sampler, a modified two-stroke garden leaf-mulching "blowervac".

Searches were carried out as part of a study by English Nature to ascertain the ecological value of "green" or "eco" roofs. These are attracting some considerable attention for their potential in new urban developments, often on what are currently ecologically interesting but visually un-aesthetic ruderal or brownfield wasteland sites of great financial value and even greater political significance.

All of the roofs are flat, with very short growth of mainly stonecrops (various *Sedum* species) ideal habitat for using a suction sampler. Roofs of the Calthorpe Centre on Grays Inn Road and the Tower Hamlets Park Cemetery Visitor Centre are covered with a shallow layer of gravel, variously planted with native and garden stonecrops and other wild and garden plants. Some self-seeding of grasses and wild plants has also occurred. The plant layer is irregular, with areas of bare substrate. The roof of the Canary Wharf complex is covered with a thin (20 mm) horticultural rubber matting planted with a broadly uniform and manicured layer of stonecrops.

It is possible that the *Tachys* was brought to all of the roofs with the various substrates when they were constructed. The gravel probably came from gravel pits

where the beetle might be more naturally expected to occur. The rubber mats on Canary Wharf were apparently propagated by a specialist company in East Anglia and delivered like artificial turf. However, all of the roofs were constructed from five to ten years ago, so the continued presence of the *Tachys* shows that it is breeding in a perfectly appropriate albeit artificial habitat.

Contrary to my expectations, none of the roofs was particularly dry and after recent rain they were quite spongey. However, they were all extremely exposed and during hot dry weather probably become an extremely harsh environment. This closely resembles the nature of the gravel, sand or clay on coast or river bank or gravel pit where the beetle's original home might be expected.

Since this beetle was first found on the sandhills at Wallasey, near Liverpool, in 1884 (Smedley, J. H. 1886. *Entomologist's Mon. Mag.* **22**: 43), it has appeared to spread, or at least to have been found more widely (Luff, M. 1998; *Provisional atlas of ground beetles (Coleoptera: Carabidae) of Britain*). I expect coleopterists armed with suction samplers will continue to find *Tachys parvulus* and much else of interest if they have the opportunity to scale roofs in their local neighbourhoods.– RICHARD A. JONES, 135 Friern Road, East Dulwich, London SE22 0AZ (E-mail: bugmanjones@hotmail.com).

A further record of *Dicranoptycha fuscescens* (Schummel) (Dip.: Limoniidae) in north Kent

Dicranoptycha fuscescens was recorded as new to Britain by C. J. Little on 5.vi.1973 from Darenth Wood, Kent (Stubbs, A. E. & Little, C. J. 1974. *Dicranoptycha* Osten-Sacken (Diptera, Tipulidae), a cranefly genus new to Britain. *Proc. Br. ent. nat. Hist. Soc.* **1974**: 44-46). Falk (1991. *A review of the scarce and threatened flies of Great Britain (Part 1)*. Research and Survey in nature conservation, No 31) referred to one other record from Kent – Cuxton, 1976 and also in South Essex – Grays Chalk Pit, 1970s and Mr A. Stubbs (pers. comm.) has traced a further old record from Surrey. On 29.v.2001, I found a single male amongst rank grassland along the southern chalk cutting at Bluewater Park, near Dartford (O. S. grid reference TQ 58107320 and about 1km from where the original specimen was discovered. Stubbs & Little (*op. cit.*) described the habitat at Darenth Wood as "a well drained site just inside deciduous woodland with a field layer of bracken (*Pteridium aquilinum* (L.) Kuhn.), bramble (*Rubus fruticosus* L. agg.) and locally nettle (*Urtica dioica* L.). …It is probable that the specimen was taken on Thanet Sand or Plateau Gravel or a mixture of the two at ancient earthworks.". Whether the Bluewater specimen was a stray from Darenth Wood, the northern boundary of which is only 200-300 metres away, or from an established colony has yet to be ascertained, but as two of the five recorded sites are chalk pits this habitat cannot be discounted.– LAURENCE CLEMONS, 14 St. John's Avenue, Sittingbourne, Kent ME10 4NE.

Further records of *Blaesoxipha plumicornis* (Zett.) (Dip.: Sarcophagidae) in Kent

Earlier in this journal (*Ent. Rec.* **110**: 91) I drew attention to the discovery of *Blaesoxipha plumicornis* at two sites in Kent: Northfleet in 1991 and Ditton Court Quarry in 1997. Since then the species has been found in varying degrees of abundance at five other discrete localities, each within West Kent (VC16). The data (all from my own fieldwork) are 4.viii.1999 Grain Foreshore TQ 8976, abundant in dry, coastal grassland adjacent to the Medway and Thames estuaries; 22.vii.2000 Gregg's Wood, Tunbridge Wells TQ 606416, several in herb-rich pasture; 23.vii.2000 White Hill Wood, Cuxton TQ 701672, several on exposed chalk grassland; 30.vi. and 26.viii.2001 Bluewater Park TQ 58307316, numerous along a track at the foot of a chalk cliff-face; 4.viii. and 1.ix.2001 Swanscombe National Nature Reserve TQ 597745, common on herb-rich sand with males particularly attracted to the flowers of wild carrot *Daucus carota*. In the past decade the species has, therefore, been found in at least six ten-kilometre squares in VC 16 and may be described as widespread and locally abundant there.– LAURENCE CLEMONS, 14 St. John's Avenue, Sittingbourne, Kent ME10 4NE.

Sciarid fungus gnat larvae in sugar beet fields (Dip.: Sciaridae)

The larvae of some species of Sciaridae are well known as pests of mushrooms. Research by Hoyer & Kristensen (*Acta Horticulturae* **298**: 287-295) has suggested that they can cause direct damage to primroses *Primula vulgaris*.

In recent years, Broom's Barn in Suffolk has received several reports of vast numbers of fly larvae, or of black flies, in sugar beet fields in East Anglia. Some of the growers in whose fields these infestations occurred were curious or alarmed to see so many larvae and adult flies. In cases when it was the larvae that attracted attention some were reared through to the adult stage in order to identify them; these proved to be *Lycoriella solani* (Sciaridae). On the one occasion when the adult flies, and not the larvae, caused some alarm the species concerned was the larger *Schwenkfeldina carbonaria*. No larvae were collected although typical sciarid larvae could be found in the soil. Both these species are found commonly over most of the UK.

There was no evidence in any of the fields visited that the larvae were causing direct damage to the sugar beet. However, in one field many of the seedlings in the areas with the largest numbers of *L. solani* larvae were stunted in comparison to the rest of the crop. When these stunted plants were dug up some had large numbers of larvae surrounding their roots, yet there was no sign of feeding damage. Possibly the larvae had disturbed the soil sufficiently to impair the ability of the roots to take up water and nutrients?

In most of the fields from which these infestations have been reported, no organic manure had been applied. In one field many larvae were observed clustered around clumps of straw incorporated into the soil from the previous cereal crop, possibly because the decaying straw provided a rich source of fungus. Before 1993, much straw would have been burnt in the autumn previous to the field coming into sugar beet but, because this practice is now prohibited, possibly fields can now support large numbers of larvae. A large mass of larvae from another field was broken apart and at the centre was some well-rotted organic matter, well beyond recognition. Human biosludge had been applied to the field in which *S. carbonaria* was observed, though it is impossible to say whether that in some way caused the flies to infest the crop.

My thanks go to the Insect Information Service of The Natural History Museum, London, for identifying the flies.– ALAN THORNHILL, Broom's Barn, Higham, Bury St Edmunds, Suffolk, IP28 6NP (E-mail: alan.thornhill@bbsrc.ac.uk).

A note on the occurrence of *Chamaepsila luteola* (Collin) (Dip.: Psilidae) in Kent

Chamaepsila luteola was described as a new species by J. E. Collin in 1944 (*Ent. Mon. Mag.* **80**: 214-224) on the basis of specimens taken at "Raylands", Newmarket, Suffolk in September 1909 and 1910 and also from Kentford (Suffolk) and Cambridge. Dr J. W. Ismay (pers. comm.) recently informed me of another record from Taplow, Buckinghamshire in 1979. It was listed as Rare (Red Data Book category 3) by Falk (1991. *A review of the scarce and threatened flies of Great Britain (Part 1).* Research and Survey in nature conservation, 31).

During the evening of 10.viii.1983, I took a single specimen of *luteola* (confirmed by Mr P. J. Chandler) by general sweeping at Murston, TQ 9265 (VC15). The area consisted of dry fly-ash from the former cement factory and was sparsely colonised by a range of grasses and other herbaceous plants. On 1.ix.2000, and with thunderstorms approaching, I paid a short visit to Stone Castle, near Dartford, TQ 577744 (VC16). Much of the site had been closely grazed by horses although at the north-western end, where development of housing was imminent, there was a small area of scrub containing field maple *Acer campestre*, hawthorn *Crataegus monogyna*, wild rose *Rosa* sp., ivy *Hedera helix* and butterfly bush *Buddleja davidii*. The herbaceous flora consisted of mallow *Malva sylvestris*, docks *Rumex* spp. and hawkweed oxtongue *Picris hieracioides*. As befits this particular time of the year Diptera were scarce in numbers and, in the main, only single representatives of some thirty-six species were encountered. Nevertheless my efforts were rewarded with the capture of a female *Chamaepsila luteola*. On 23.viii.2001, I investigated the fly fauna at Conyer old brickworks, TQ 962652 (VC15). The site lies adjacent to the Swale and in many respects resembles that at Murston four kilometres to the west. A windbreak of Lombardy poplar *Populus nigra* "Italica" was especially attractive to a wide range of Diptera including *Dolichopus signifer* Haliday (Dolichopodidae) and *Minettia fasciata* (Fallén) (Lauxaniidae) and here two female *luteola* were swept.

Nothing has apparently been published on the life history of *C. luteola* in the wider British literature and many plant associations of other species of the genus are circumstantial. Chandler (1975. *Ent. Rec.* **87**: 13-17) recorded adults of *Chamaepsila pallida* (Fallén) from hogweed *Heracleum sphondylium* and burdock *Arctium* sp. and *C. bicolor* (Meigen) from tansy *Tanacetum vulgare*, and if any of these are also utilized by *luteola* then host plant alone cannot account for its apparent rarity. Each of the three known Kent localities may be described as "brownfield sites" and are situated on freely-drained soil with an unremarkable flora and, when combined with the limited phenology data possessed, suggest that the species may be under-recorded rather than genuinely rare.– LAURENCE CLEMONS, 14 St. John's Avenue, Sittingbourne, Kent ME10 4NE.

A further note on *Scaeva selenitica* (Meigen) (Dip.: Syrphidae) in Kent

Scaeva selenitica (Mg.) is, on the basis of published records, one of the less frequently encountered hoverflies in Kent. Chandler (1969. The Hover Flies of Kent (Diptera, Aschiza – Syrphidae and Pipunculidae). *Transactions of the Kent Field Club* **3**: 139-202) mentioned that it had been found at Eltham, Otford and West Wickham Wood in VC16 and Huntingfield and St. Margaret's Bay in VC15. Allen (2000. *Scaeva selenitica* (Meigen) (Dipt., Syrphidae) in the S.E. London area in April. *Ent. Mon. Mag.* **136**: 30) recorded a single female from Blackheath (VC16) on 9 April 1999 whilst Ball & Morris (2000. *Provisional atlas of British hoverflies (Diptera, Syrphidae)*. Biological Records Centre, Huntingdon) showed just two dots, apparently in the 10-kilometre squares TR 01 and TR 16 (both in VC15) and it is assumed that both these are based on records of adults.

On 28 May 1992, Mr Norman Heal presented me with three hoverfly larvae which he obtained through beating a Scotss pine *Pinus sylvestris* at Tunbridge Wells Common TQ 5738 (VC16). These were placed in a dry, aerated glass tube along with a sample of the plant and within a fortnight each had pupated and given rise to adult *selenitica*. On 6 June 1998 and 19 June 1999, Mr Heal obtained further larvae by beating Scots pine as we were recording together at Faggs Wood Picnic Site TQ 985348 and Torry Hill Park TQ 906574 (VC15) respectively and these were reared to adults by myself within several days. In all cases numerous specimens of the aphid *Lachnus roboris* (L.) (Hem.: Lachnidae) were present and it was undoubtedly on these that the larvae were feeding. These data indicate that searching for larvae may be a profitable method of recording the species especially as the time taken to rear through is short.

The occurrence of larvae from late-May to mid-June suggests that the adults which laid the eggs were on the wing earlier in the season, supporting the view by Falk (1991. *Dipterists Digest* **8**: 36-37) that early adult records of *selenitica* probably indicate that is a resident species in Britain, unlike the congener *Scaeva pyrastri* which is considered highly migratory and unlikely to overwinter in the British Isles.
– LAURENCE CLEMONS, 14 St. John's Avenue, Sittingbourne, Kent ME10 4NE.

Myopa testacea (L.) (Dipt.: Conopidae) in north-west Kent

On 23 April 2002, a very warm, bright day here, I spotted a brown conopid fly at rest on a low plant, more or less in shade, in the garden. Fortunately it had not moved after I had returned to the spot with a tube, and being sluggish was easily secured.

It later proved – using Collin (1960. *Ent. Mon. Mag.* **95**: 145-151), to be a female *Myopa testacea*. Collin (p.149) writes that this has been a somewhat rare species to him, recording it only from Cambridgeshire, Hampshire, Oxfordshire, Berkshire and Warwickshire, apparently singly and always in May. It seems possible that the above is the first find in the London area; though probably not the first for Kent, where the genus seems rare. Regarding the present capture, it may or may not be significant that there had been a wasps' nest near to the spot the previous autumn. A coloured figure of this species will be found in Colyer & Hammond (1951. *Flies of the British Isles*).– A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

Editorial Comment: *Myopa testacea* is indeed a fairly scare insect in the London area, though this record is not the first for here. The species may be encountered, occasionally, on the many "brownfield" sites alongside the River Thames in South Essex and West Kent (the "East Thames Corridor" – an area of national importance for aculeate Hymenoptera), though I cannot recall seeing it in Middlesex.

Further experience of _Myennis octopunctata_ Coq. (Dip.: Ulidiidae) in north-west Kent

I lately came across an article on this interesting and seldom encountered fly at Mitcham, Surrey (near London) by R. K. A. Morris (1991, *Br.J.Ent.nat.Hist.* **4**: 95), which the author had kindly sent me a decade or so ago. In it he refers to a note of mine recording the occurrence of *M. octopunctata* in a north-west Kent locality (long since destroyed). I now, belatedly, report its occurrence elsewhere in the same vice-county.

At Blackheath in the London suburbs, in July 1960, *Myennis* was not infrequent along with the stratiomyid *Xylomyia* (*Solva*) *marginata* (Mg.) on some logs of black poplar lately dumped at the spot. As in Mr Morris's case, some heart-rot was present. The following year there were fewer of the flies, which are very tephritid-like in appearance and behaviour. A year later I moved to Charlton and again noted a few *Myennis* on a cut poplar log in the local park. It seems probable that the species could occur anywhere in the London area (and doubtless far more widely) given the right conditions. These however are not often encountered, since unsound poplars tend to be quickly removed by local authorities.– A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

Hazards of butterfly collecting. Seasonal variation in the Common Evening Brown – Bangladesh, 2001

Around dusk on 20 October 2001, I returned home to our ground floor car park in one of the leafy suburbs of Dhaka, Bangladesh. We had had a long and very wet monsoon period and sometimes did not see the sun for a week at a time, but now the weather had cooled a bit and lost its muggy character, a sure sign that the monsoon was coming to an end.

The garage was full of large brown butterflies, more than fifty, attracted to the fluorescent lights. A quick investigation showed, as expected, that this was the mass emergence of the dry season form of the Common Evening Brown *Melanitis leda* L.; and that, I already knew from India, was an even surer sign that the monsoon was coming to an end.

My driver, sundry security guards, caretakers, and hangers-on massacred the lot in the interests of science. There were a few male wet season forms, mostly in poor condition, but the bulk was freshly hatched males of the dry season form and some females. During the past few months the species had been pretty scarce and then only in the wet season form.

The uppersides of the two forms are not very different; both are brown with a black-and-white apical eye-spot on the forewing, surrounded by orange shading. They can however, be told apart from the wing-shape. That of the dry season form is more angular, with drawn-out forewing apex and angled hindwing. However, the undersides are so different that the two were originally described as distinct species. The wet season form is very stable compared to the dry. The main pattern is a fine striation of black on an off-white ground-colour and a range of prominent submarginal eye-spots. These eye-spots are prominent when the butterfly is at rest. In the dry season form the eye-spots are wholly suppressed; only traces can be seen of fully formed spots that are minute. The ground-colour is some shade of grey, ochreous, or light brown with a varying amount of darker and lighter markings; no two specimens are rigorously alike. However, all the various dry season forms are well camouflaged when they are resting on the ground or among dry leaves.

I had known seasonal variation in nature and literature since I was a kid in India, but I had never given much thought to the "why" of this phenomenon. During the famous 1981 "RESL Symposium on Butterfly Biology", a source of inspiration to all concerned, I met Paul Brakefield who was presenting a paper on the relatively modest, but quite clear, geographical, individual, and sexual differences in the spot patterns of the Meadow Brown *Maniola jurtina* in Europe. He was not well appraised of the tropical seasonal forms, so the next day I brought some examples, and we ended up discussing them in the pub till closing time. Paul was quite excited, and he and I began digging in various corners of the subject matter. We found snippets of interesting information, some indication as the climatic triggers of the seasonal forms, but very little on their function. Yet we were quite convinced that evolution of differences of this magnitude within a single species would need to have great survival value, not least since similar, parallel variation exists in most other butterfly families.

In 1984 we published our hypothesis on the causal factors to seasonal variation (Brakefield & Larsen, 1984. *Biological Journal of the Linnean Society*, London, **22**:1-12). We suggested that the life-style of the wet and dry forms were very different, and that one result of this was the need for protection against different predators at different times of the year. Thus during the hot muggy monsoon season, with the sky mostly overcast, the wet season form can be active all day, mating, laying eggs, and finding fallen fruit from which to drink. Its predators are likely to be active hunters, such as birds and lizards, and against these the sub-marginal eye-spots are known to function as deflective, directing attacks to the wing margin where no or little damage is done. Certainly, individuals with damage to the margins are often met with. The dry season form flies during the coldest season, when sunshine is plentiful, keeping the Evening Brown inactive except at most around dusk and dawn. There is also evidence of hibernation during the coldest months, sometimes in caves and hollow trees. Here predators are likely to be browsing creatures such as skinks and shrews which search for potential roosting sites and survey the scene: "Anything to eat here?" They might well spot a wet season form a long way off, but are fooled by the camouflaged one.

Paul became a professor of Biology at Leiden University and several of his students have now received MSc or PhD degrees on various aspects of seasonal variation. Most new data indicate that our 1984 hypothesis was fundamentally sound. And this is also the impression I get during my walks in the garden suburbs of Dhaka. The mass emergence of dry season *M. leda* last October was matched by one in the Peacock Pansy *Junonia almana* L., which had been almost absent for months. They were also synchronic in New Delhi in 1986, but in early October since the monsoon ends earlier. The mass emergence of October was not much in evidence during the rest of winter, and in December/January butterflies in general are very thin on the ground. But in March large numbers, in various states of repair, began to come to banana traps; their progeny must be the ones which suddenly re-establishes the wet season form in April. But I don't think there is much, or even any, breeding between October and March.

Much research remains to be done on seasonal variation, but so far it is nice that most of the additional information now secured tends to support our 1984 hypothesis on this fascinating phenomenon.– TORBEN B. LARSEN, Bangladesh, World Bank, 1818 H. Street N. W., Washington D. C., 20433, USA.

Polygonia egea (Cramer) (Lep.: Nymphalidae) in Corsica

From a glance at two recent works it seems that I should put on record that I caught and released a female specimen of *Polygonia egea* (Cramer) from its struggle against the window of the salon of the Hôtel d'Äitone, Evisa (850 metres), in western Corsica on 18.vii.2001. The specimen was in reasonably good condition and there is no doubt that it was this species and not *P. c-album* (L.) – which I saw in several places in Corsica in July 2001, both as larvae and as adults. Although Tolman & Lewington (1997. *Butterflies of Britain & Europe*: 154) indicate that *P. egea* is found in Corsica, Kudrna (2002. *Oedippus* **20**: 221, as *Nymphalis egea*) shows no records from Corsica

for any period and Lafranchis (2000. *Les papillons de jour de France, Belgique et Luxembourg et leurs chenilles*: 382) indicates a lack of its confirmed presence since 1980.– MARK R SHAW, Keeper of Geology and Zoology Department, National Museums of Scotland, Chambers Street, Edinburgh EH1 1JF.

Haltichella rufipes Olivier (Hymenoptera, Chalcididae) in Buckingham Palace Garden

The recent account of the natural history of Buckingham Palace Garden (Part 2, pp. 109-326, 2001. *Supplement to The London Naturalist* number 80) did not include a chapter on the parasitic Hymenoptera, although a few species of gall wasp and one chalcid were listed on pages 306-307. While surveying the Garden for Diptera I collected some Parasitica, which were kindly determined by Mark Shaw, but these records remain unpublished. These included a rather distinctive specimen evidently belonging to the family Chalcididae, which includes only six species in four genera in the British fauna. This ran in the Royal Entomological Society Handbook by C. Ferrière and G.J. Kerrich (1958. *Handbk Ident. Br. Ins*. VIII (2(a)), 40pp), which keys the British Chalcididae, to *Haltichella rufipes* Olivier, the only British species of its genus. This determination was later confirmed by Dick Askew.

This is a mainly black insect, with partly red legs and has the scutellum produced into two strong teeth. The specimen was collected on 13 August 1997 along the wooded north-west fringe of the Garden. I was later surprised to find a large number of individuals of *H. rufipes* in the unsorted residues of two Malaise trap samples from the Garden, which I received to check for small Diptera. These samples were from the Malaise trap operated on the wooded Mound at the southern end of the Garden from

1995 until 1997 and were the last two samples taken, dated 19 June to 18 July and 18 July to 17 August 1997, the period during which my specimen was taken. Presumably *H. rufipes* also occurred in Malaise samples from earlier years but had not been identified.

The biology of Chalcididae is diverse, something being known of three of the five British genera. Species of *Chalcis* are well known to parasitise *Stratiomys* species (Diptera, Stratiomyidae), ovipositing into the egg but only completing development after the fully grown aquatic larva has found a pupariation site above the water level (Cowan, D.P. 1979. *Great Lakes Entomologist* 12: 133-136; Shaw, M.R. 1983. *Ent. mon. Mag.* 119: 73-74). *Spilochalcis* parasitises sawflies of the genus *Arge* (Hymenoptera, Argidae), according to Ferrière and Kerrich (op. cit.). *Brachymeria* is recorded from lepidopterous pupae, dipterous puparia and cocoons of Ichneumonoidea as a pseudohyperparasitoid; the British species *B. minuta* (L.) is probably exclusive to dipterous puparia and has been reared several times from Sarcophagidae developing in snails (Mark Shaw, pers. comm.). However, the biology of *Psilochalcis* (= *Invreia* in the Handbook) and of *Haltichella* is unknown. *Haltichella rufipes* was stated by Ferrière and Kerrich (op. cit.) to be scarce in south-east England to Cambs. Its occur. ence in numbers in Buckingham Palace Garden indicates a host that is also common there and there should be scope for studying its biology.

I am grateful to Mark Shaw and Dick Askew for assistance with determinations. Some of the material of *H. rufipes* has been deposited in the National Museums of Scotland. This material was collected as part of the in-depth survey of the flora and fauna there, carried out with gracious permission of Her Majesty The Queen, by the London Natural History Society and the Natural History Museum.– PETER CHANDLER, 606B Berryfield Lane, Melksham, Wiltshire SN12 6EL.

An additional host for the shoot cutting weevil *Rhynchites germanicus* Herbst (Col.: Attelabidae)

On 10 May 2002, shoot cutting typical of that caused by a *Rhynchites* species was observed on *Viburnum lantana* planted as part of a hedge at the Royal Horticultural Society's Garden at Wisley, Surrey (TQ 063591). Several of the severed shoots were collected in order to rear the adult weevils. An adult that emerged on 1 July 2002 was identified as *Rhynchites* (s.g. *Neocoenorrhinus*) *germanicus* Herbst. Morris (1990. Orthocerous weevils. Coleoptera, Curculionoidea (Nemonychidae, Anthribidae, Urodontidae, Attelabidae and Apionidae). *Handbooks for the Identification of British Insects*. Vol 5, 16), lists this species as affecting a wide variety of Rosaceae, *Salix*, *Quercus*, *Cornus* and as a pest of strawberry, blackberry and other related soft fruits, but not *Viburnum*.– ANDREW HALSTEAD and ANDREW SALISBURY, Royal Horticultural Society's Garden, Wisley, Woking, Surrey GU23 6QB.

Pauper Pug *Eupithecia egenaria* (H.— S.) (Lep.: Geometridae) in Worcestershire

Shrawley Wood is a large and unusual area of apparently native Small-leaved Lime *Tilia cordata* woodland near Stourport, on the west bank of the River Severn. Most of the wood consists almost entirely of lime coppice, with a only small admixture of

other broadleaved trees, but with some large conifer blocks in the Forest Enterprise part of the wood. I had always hoped to find Pauper Pug *E. egenaria* there, but a few visits with actinic lights in the 1970s and 1980s were unsuccessful. I had however recorded some very local lime-feeding microlepidoptera. The gelechiid *Dichomeris ustalella* (Fabr.) is widespread throughout most of the wood, with larvae being easily beaten from lime coppice in September, and small numbers coming to light in May and June. The small grey larvae of the larger southern form of the Olethreutine *Metendothenia atropunctana* (Zett.) also occur in September, making a "purse" in up-folded leaves of lime. The pyralid *Salebriopsis albicilla* (H.– S.) comes to light in good numbers in June, and larvae have been beaten from lime in September. Other more widespread lime-feeding microlepidoptera, such as *Roeslerstammia erxlebella* (D. & S) and *Semioscopis avellanella* (Hb.) are very common. Thus, there seemed every reason to expect that localised lime-feeding macrolepidoptera should also occur.

On 3 June 2000 I went to the wood with the newly formed Worcestershire Butterfly Conservation "Mothers" group, to carry out a light trapping session with the kind permission of Forest Enterprise. It was not a very good night, being cold and windy, but just before we packed up to go home two fairly large grey pugs came to my m.v. light. They looked interesting, but were so worn I was uncertain of their identity until I had done a genitalia examination, which confirmed that they were both male *egenaria*. We went back to Shrawley Wood on 2 May 2001 with more generators and m.v. lights and found the moth to be widespread, recording 12 in all, including two females. I obtained ova from these and bred eleven moths in May 2002. So far there has been no sign of Scarce Hook-tip *Sabra harpagula* (Esper) but we live in hope!

Although not recorded before 2000, it seems likely to be a long-term native resident rather than a recent arrival in the county, particularly in view of the records of the lime-feeding microlepidoptera. The nature of the wood, as regards the presence of lime coppice, seems to have been unchanged since recordings in the Doomsday Book, and not to be due to the planting of Limes in the past two centuries. It is not surprising that it has not been recorded before, because there has been little recording at this site previously, especially with light traps.– A. N. B. Simpson, The Sycamores, Old Rectory Gardens, Leigh, Worcester WR6 5LD.

More on Dotted Chestnuts

With reference to Colin Plant's recent note in this journal (*antea*, 130) on the invasion of the Dotted Chestnuts *Conistra rubiginea*, I took this species at m.v. light at Durlston Country Park, Swanage, Dorset (grid reference SZ 034775), on 4 April 1999. Despite trapping there hundreds of times over the years during autumn and spring, this remains the only one I've seen. It may also be worth mentioning that several common species of migrant were taken the same night; this was also the same night/week that many *Orthosia miniosa* were taken at southern/eastern coastal sites.

I also took Colin's advice (pers. comm.) and searched the garden junipers for *Argyresthia trifasciata*. I placed the kite net under a large creeping juniper, kicked the bush, and hey presto – five *A. trifasciata* sitting on the net. These are both new vice county records for North Wiltshire (VC7). – Steve Nash, 23 Henley Drive, Highworth, Wiltshire SN6 7JU (E-mail: steve@migrantmoth.com).

Epicaecilius pilipennis (Lienhard) (Psocoptera) new to England from West Sussex

A single female of this distinctive bark fly was found in Lavington Plantation, near Petworth in West Sussex (SU946186), 3.vii.2002. The site is a mature pine plantation established on part of the former Lavington Common, an area of humid heath. The specimen was swept from a wide open ride with vegetation largely unchanged by the conifer planting, *ie* a humid heath community dominated by *Molinia caerulea* with scattered bushy *Erica tetralix* and *Calluna vulgaris* growing on a shallow peaty soil.

The species was described new to science only relatively recently when three specimens were found at one site on Madeira in 1992 (Lienhard, C., 1996, Psocoptères nouveaux ou peu connus de quelques Iles Atlantiques (Canaries, Madère, Açores, Ascension) et de l'Afrique du Nord (Insecta: Psocoptera). *Boletim do Museu Municipal do Funchal (História Natural)* **48** (267): 87-151; Lienhard, C., 1998, Psocoptères Euro-Méditerranéens. *Faune Fr.*, **83**: 1-517), associated with "*Erica* et plantes mortes près du sol, dans une forêt mixte peu dense". This fits very well with the Sussex situation, but, interestingly, it has also been found at a number of sites in the Lothians, Scotland, from 1998 onwards, "almost invariably on the trunks of mature deciduous trees" (Saville, B., 1999, The Barklice (Insecta: Psocoptera) of the Lothians (Scotland). *Glasgow Naturalist* **23**: 50-54.). It has since been found in Fife and Glasgow (Saville, B., 2001, New British Barklice (Psocoptera) since 1974. *Ent.mon.Mag.*, **137**: 79-83.).

If one assumes that it is native to Madeira then it is intriguing to consider how it might have arrived in two very distant parts of Britain – it seems unlikely that it is an overlooked native to Britain. A casual introduction with plant material imported for the garden or houseplant trade does seem the most likely. There is for instance a substantial trade in orchids from Madeira into Britain (J. Bradbury, pers. comm.) and it does not stretch the imagination too much to envisage a small dark insect associated with humid peaty vegetation being inadvertently brought in with such plants.– K. N. A. ALEXANDER, 14 Partridge Way, Cirencester, Gloucestershire GL7 1BQ.

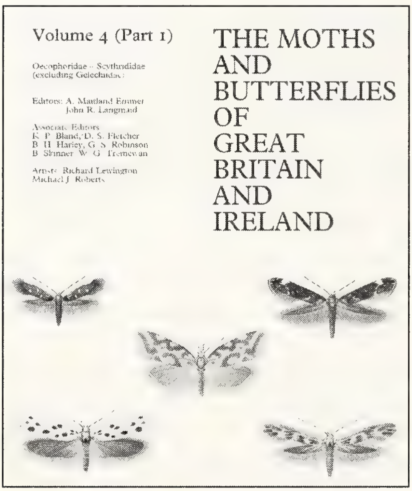
A woodlouse (Isopoda) caught in a spider's web

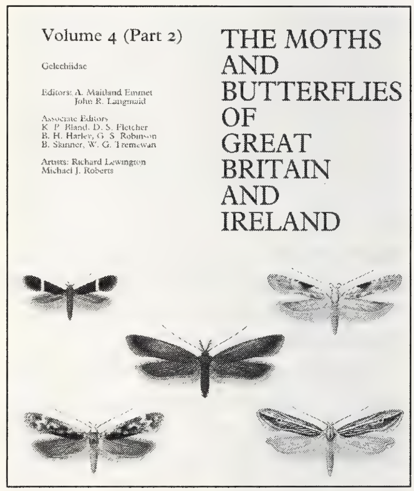
In my garden, on 16 June 2002, I noticed that a garden spider *Araneus diadematus* Clerck had captured a large solid object and had trussed it up in silk. Thinking it looked like a beetle I removed it from the web, in a honeysuckle bush, and unravelled some of silk. It proved to be a medium-sized specimen of the rough woodlouse *Porcellio scaber* Latreille.

It is a mystery how this mainly nocturnal leaf-litter denizen came to be captured by the spider's aerial snare. I can only surmise that the woodlouse was crawling up the honeysuckle bush or the nearby fence and lost its footing to land unceremoniously in the orb web. The only other time I have seen a flying woodlouse was when it was carried off as prey by a social wasp *Vespula* sp. The wasp landed on a leaf to chew its prey briefly before flying off again.– RICHARD A. JONES, 135 Friern Road, East Dulwich, London SE22 0AZ (E-mail: bugmanjones@hotmail.com).

BOOK REVIEWS

The Moths and Butterflies of Great Britain and Ireland. volumes 4(1) Oecophoridae – Scythrididae and 4(2) Gelechiidae by **A. M. Emmet and J. Langmaid (Eds.).** Volume 4 (1) — 326 pp., 7 colour plates, hardbound ISBN 0 946589 66 6 or softback ISBN 0 946589 72 0; volume 4 (2) — 277 pp., 6 colour plates, hardbound ISBN 0 946589 67 4 or softback ISBN 0 946589 73 9. Harley Books, 2002. Hardbound price £80 per volume or £150 if both bought as a set; softback price £44 per volume or £82.50 as a set. Available direct from Harley Books, Great Horkesley, CO6 4AH, England. The softback version will be published on 1 September 2002 and orders are now being taken.





Long-overdue and split into two volumes, each of a price similar to the original predicted price for the whole, but at last we have volume 4 of *MBGBI.* So — was it worth the wait and expense?

The delay was in part caused, of course, by the sad loss of the senior editor Maitland Emmet in 2001 and these two volumes stand as a tribute to a man who was certainly one of the twentieth century's greatest microlepidopterists. He is commemorated in a most fitting tribute by the publisher on pages 7 and 8 of the first part of the volume.

The role of senior editor has been taken on by John Langmaid and if these two re-edited volumes are anything to go by then we can expect the ongoing improvements to the series to continue. We seem to have, at long last, an editor that agrees with the idea that the male and female genitalia of every species should be illustrated. The text is comprehensive, without being un-necessarily lengthy. It presents a description of the adult moth, comments on similar species, details of the life-history as far as these are known (there is a lot still to find out and these volumes serve an especially useful purpose in bringing to the attention of a wider audience of microlepidopterists the names of the species that require greater study) and distribution. The maps indicate distribution by vice-county rather than by ten-kilometre square. I have already referred to ongoing improvements. These are nowhere more evident than in the colour plate sections of the works. These plates are, quite simply, both artistically excellent and scientifically accurate; the artists, Richard Lewington and Mike Roberts, are to be heartily congratulated. However, whilst many species are distinctive, and ought to be easily named from the plates alone, many others, especially in the Gelechiidae, are confusingly similar. This is reflected in

the absence of a key to adults of gelechiids based on external morphological characters. Instead, there is a key to genera based upon male genitalia, supported by excellent line-drawings and then a key to species in each separate genus based on wing pattern, colour, etc. There is no generic key to the females. Some of the characters used here are a little simple and, to an extent inappropriate. For example, there is a key to the two species of *Chrysoesthia* Hübner in part 2, (page 94) where we are invited to decide, as a means of separation, if the forewing ground colour is reddish orange or dark purplish fuscous. Frankly, this is merely repeating what is better presented in the colour plates, where the two species are distinctly different from one another. In a worn specimen (or a fresh one that someone like me has attempted to "set"), this might be rather little use; and what about the mass of material from my malaise traps – transparent and in alcohol! It might have been better to use less obvious characters in the key, perhaps the fact that the antennae of *C. drurella* (Fabr.) are black apart from the dark grey distal sections, whilst in *C. sexguttella* they are black with white rings around the segments. In fairness, these characters are in the text, but the identification keys seem perhaps to be directed to people who have neatly set specimens rather than real entomologists?

What is especially useful, also, is the inclusion of some very nice, clear drawings of leaf mines made by several species; I do hope that at some stage Harley Books might consider the value of producing an illustrated guide to Lepidoptera leaf mines.

It is regrettable, however, that a few errors have crept in to the two works. Some, such as the transposition of the captions to figures 8 and 9 in Plate 2 of volume 4(2), so that Fig. 8 *should* be *Aristotelia brizella* and Fig. 9 *should* be of *A. ericinella*, are indicated on an *erratum* slip issued with the books. Others are not so notified. Most are minor and of no consequence, though a very few are more important. For example, in part 2, *Coleotechnites piceaella* (Kearfott) is not mapped for VC 21 (Middlesex) in spite of this being the locality for the first (and third) British records (*vide* Ellerton, J., 1970. *Proc. Trans. Br. ent. nat. Hist.* Soc. **3**: 33 – 41, a reference which is in fact cited by the author of this particular text). It is a pity, to a degree, that historical data such as the locality and date of the first British record is not a standard entry in the species texts. Surely the authors have had adequate time to do this?

A total of 309 species are covered in this two-part work, with contributions from a team of expert authors that reads like an entomological "*Who's Who*". An introductory chapter is presented by Jens Rydell and Mark Young on the subject of *The evolution of lepidopteran defences against bats* and this is illustrated with text figures, sonograms and six colour photographs (the three of bats, in particular, by Jens Rydell are superb). However, I stand by my repeated earlier statements that these "great" chapters have no real place in this reference work. The pages used so far almost amount to an additional volume!

So — was it worth the wait and expense? Most certainly "yes". If the money is a limiting factor, note that the softback version appears in September. Let us hope that the gap between volume 4 and volume 5 on the Tortricoidea (presumably this will also be in two parts) will not be as long as the gap between volumes 3 and 4, or we might all be dead by the time it appears.

Colin W. Plant

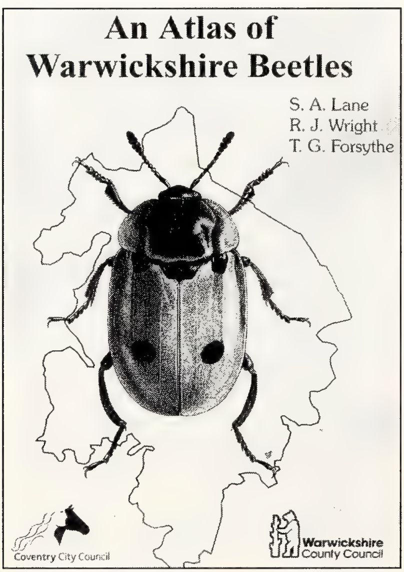
Die Schmetterlinge Baden-Württembergs. Band 8: Nachtfalter VI by **Günter Ebert (Rd.)**. 541 pp., 520 colour photographs, 452 drawings, 186 dot distribution maps. 240 x 170mm, hardbound, ISBN 3 8001 3497 72001. Ilmer GmBH, Stuttgart, 2001. 50 Euros (approximately £33). Available direct from Verlag Eugen Ulmer GmBH, Wollgrasweg 41, D-70599 Stuttgart, Germany.

Readers of this journal may, if they do not already know, like to hear that volume 8 of *Die Schmetterlinge Baden-Württembergs* was published last year. This volume is the sixth covering the moths (Nachtfalter) and contains the first part of the Geometridae, comprising the

Archiearinae, Alsophilinae, Oenochromnae, Geometrinae, Sterrhinae and Larentiinae, written by various German experts under the editorship of Günter Ebert, formerly of the Karlsruhe Natural History Museum. This superbly illustrated book maintains the high standard of the previous volumes which I reviewed in past issues of this journal (**104**: 87; **107**: 203-204; **110**: 146-146; **111**: 46). Many of the species included are found in Britain and Ireland and the generous space devoted to them consists of a summary of their world distribution, distribution on Baden-Württemberg, phenology, pre-imaginal stages, ecology (habitat, larval foodplants, imaginal nectar plants and notes on behaviour) and their conservation status in Germany and in Baden-Württemberg. All imagines and many of the larvae and pupae of the nearly 200 species covered are illustrated with first class colour photographs. There are also 186 dot distribution maps.

The volume, which runs to 541 pages and contains 520 colour photographs and 452 diagrams and drawings, is in hardback and can be purchased direct from the publishers. The text is in German.– John F. Burton, In der Etzwiese 2, D-69181 Leimen-St. Ilgen, Germany.

An atlas of Warwickshire beetles by **S. A. Lane, R. J. Wright and T. G. Forsythe**. 218 pp., A4, paper covers, wire-bound, ISBN 1 869841 33 6. Warwickshire Biological Records Centre, 2002. £12.50 plus £3 UK postage, from Herbert Art Gallery and Museum, Coventry CV1 5QP or from Warwickshire Museum, Warwick CV34 4SA.



This work covers the Watsonian vice-county of Warwickshire, not the modern county and aims to indicate the distribution and abundance of beetles in this area from the publication of the *Victoria County History* in 1904 to the end of 2000. It is, thus, essentially a twentieth century atlas of Warwickshire beetles.

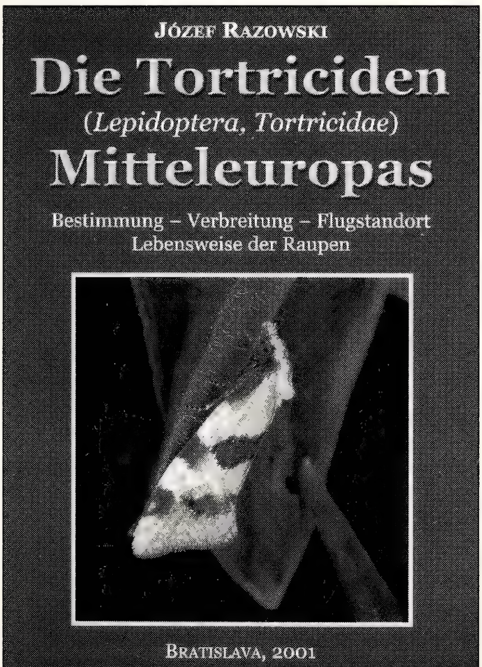
Full-page maps indicate Warwickshire's mainly urban areas, improved grassland, arable land, woodland, water and outline geology. There is an historical account of beetle collecting in Warwickshire and a complete list of recorders. A gazetteer of all places mentioned in the work follows and presents four-figure grid references for each. Some important Warwickshire beetle sites are highlighted on another full-page map and for each of these the total number of beetles recorded is given and Nationally Scarce species are listed. A complete listing of all the Nationally Scarce beetles in the county follows, and the number of Warwickshire sites for each is given. A complete county checklist is then presented before progressing to the main species accounts. At the rate of eight species per page, a distribution map and accompanying text is presented for every species recorded since 1904. All species with confirmed records for this period are dealt with in the main body of the atlas, occupying 159 pages. A total of 1162 species are discussed and mapped at the level of 5 × 5 kilometre squares. A separate section, without maps, follows and covers species only noted prior to 1904, as well as those doubtfully or erroneously listed and those reliably recorded but without locality data. References and a beetle species index bring up the

page on significant additional records found during 2001 and 2002 – after the cut-off point for the main work; eleven are new county records and six represent the first county records in the post-1904 period.

This is a excellent piece of work which, for the first time, allows the beetle fauna of an entire county area to be understood and new records to be put into context. I have already found it enormously useful at the professional level, enabling me to set into context beetle records made during environmental assessment projects. There are a number of minor errors noted on a single sheet of *Addenda et errata*, but this is no real surprise in a pioneering work of this magnitude. It is noted that the Royal Society generously made a grant towards the cost of the project. It is to be hoped that the entire exercise will be repeated in other county areas.

Colin W. Plant

Die Tortriciden (Lepidoptera, Tortricidae) Mitteleuropas by **J. Razowski**. 320 pp., 24 colour plates and 150 pages of black and white drawings. Hardbound, ISBN 80 967540 7 6. Slamka, Bratislava, 2001. Price approximately £45 depending on supplier.



This book contains a very brief introduction in German, a checklist of species, brief descriptions in German including the flight times and known food plants, habitat and distribution. Then follow line drawings of male and female genitalia of most species and 24 coloured plates depicting the adults.

The checklist of species agrees for the most part with the European checklist except that it is confined to species occurring in Germany, Poland, The Czech Republic, Slovakia, Austria and Hungary. For this reason several species occurring in Britain are not included, the resident species are: *Cochylis molliculana, Epiphyas postvittana, Lozotaeniodes formosanus, Ditula angustiorana, Cnephasia conspersana, Lobesia littoralis, Acroclita subsequana* and *Rhyacionia logaea*. Adventives are also excluded. There are, of course, many species not occurring in Britain.

In some cases there is not agreement among specialists whether taxa are synonyms or distinct species;. For example, *Pammene herrichiana* is not given specific status in this book. In an identification guide one would not expect a full discussion, but it would have been better if a statement were included such as "some authors regard this as a good species, or a synonym of ..". A few names and the endings of names have been changed, most of these are wrong and people would be well advised to stick to the names contained in the recent checklists by Bradley. In particular *Endothenia ericetana* should not be changed, and the supposed senior synonyms introduced for *Epinotia immundana* and *Cydia splendana* are doubtful.

The genitalia drawings appear accurately drawn and well reproduced at a sensible size. The colour plates are photographs and all the moths are figured at the same size, although the wingspan is given in the species description. It is a pity a bar showing the actual size was not included on the plates. In some cases where there is sexual dimorphism in two closely related species, the male of one is shown and the female of the other. This may lead to misidentifications with all males being assigned to one species and females to the other. The same number is maintained for each species throughout making it easy to relate the description to the illustrations of genitalia and specimens, and the locality from which each specimen depicted comes is given.

This book should be useful to British lepidopterists, especially since the Ray Society volumes are out of print. The plates are readily recognisable and the great majority of specimens illustrated are in good condition.

Unfortunately there are rather a lot of mistakes, and in order to avoid these being repeated a list of them is included below. It is a pity that these errors detract from the usefulness of the book, but it is still to be recommended and is very good value considering the number of coloured illustrations.

List of errors:
Where a figure is doubtful, but not definitely wrong a ? is inserted to denote "confirmation needed".

page	**detail**
88	474-475. The adult figured for *succedana* (Taf. 20) corresponds to the genitalia figured for *ulicetana.* Further research is needed.
108	28 for *notana* substitute *ferrugana* & 29 for *ferrugana* substitute *notana* (error as also in *Microlepidoptera Palaearctica*)
136	255 for *abietana* substitute *bifasciana,* 256 for *bifasciana* substitute *abietana*
177	for *thomanni* substitute *harpeana*, *D. thomanni* is not figured.
183	28 for *notana* substitute *ferrugana* & 29 for *ferrugana* substitute *notana* (error as also in *Microlepidoptera Palaearctica*)
206-7	Fig 214 is identical to Fig. 217, both are *B. lacteana*
258	28 for *ferrugana* substitute *notana*, 29 for *notana* substitute *ferrugana.* 30 for *quercinana* substitute *ferrugana*?
262	65 add ? after *luridana*, 67 for *minimana* substitute *manniana*, 68 for *permixtana* substitute *minimana*?, 69 for *alismana* substitute *minimana.*
270	171a is not f. *sauberiana*, 171b is male
274	212 is female
278	257 for *semifasciana* substitute *infida*, 258 for *infida* substitute *semifasciana*, 258a is correct, 259 for *lineana* substitute *semifasciana*, 264 for *sororculana* substitute *turbidana,* 278 for *rosaceana* substitute *C. rufana* ? *A. sororculana* is not figured.
284	344 is not an *Epinotia* sp.
288	405 for *balatonana* substitute *obumbratana*
292	436 for *cnicicolana* substitute *obscurana*, 439 for *costipunctana* substitute *cnicicolana*, 442 for *confusana* substitute *costipunctana*
294	474 for *succedana* substitute *intexta*, 474a and 477 are correct
296	512 for *difficilana* substitute *internana*, 513 for *internana* substitute *difficilana*, 513a is *G. nigrostriana*, 516 (+a) for *lunulana* substitute *orobana*
298	522 for *nigrostriana* substitute *internana*, 526 for *molesta* substitute *herrichiana* 537 for *insulana* substitute *ignorata*, 538 for *suspectana* substitute *albuginana*

300 558 for *albuginana* substitute *suspectana*, 559 for *nitidana* substitute *weirana*, 560 for *weirana* substitute *nitidana*

302 589 for *flavidorsana* substitute *alpinana*?, 590, 590a for *alpinana* substitute *flavidorsana*

– DAVID J. L. AGASSIZ, 23 St James's Road, Gravesend, Kent DA11 0HF.

EDITORIAL NOTE: There are in fact 23 species included in John Bradley's British Isles checklist that do not feature in Józef Razowski's book *Die Tortriciden Mitteleuropas*, although only about nine or ten of these are at all likely to be encountered by non-specialists. However, since it appears that this new volume has been purchased by, and is in daily use by, a large number of people who are relatively new to the study of Lepidoptera, it might be useful to list the missing species. They are:

964a *Cochylis molliculana* Zeller
975 *Homona menciana* (Walker)
981a *Archips argyrospila* (Walker)
981b *Archips semiferanus* (Walker)
995 *Clepsis trileucana* (Doubleday)
996 *Clepsis melaleucanus* (Walker)
997 *Epichoristodes acerbella* (Walker)
998 *Epiphyas postvittana* (Walker)
999a *Adoxophyes privatana* (Walker)
1001 *Lozotaeniodes formosanus* (Geyer)
1003 *Lozotaenia subocellana* (Stephens)
1010 *Ditula angustiorana* (Haworth)
1012a *Platynota rostrana* (Walker)
1017 *Cnephasia gueneeana* (Duponchel)
1019 *Cnephasia conspersana* Douglas
1095 *Apotomis sororculana* (Zett.) (see review)
1109 *Lobesia littoralis* (Humphreys & Westwood)
1160 *Acroclita subsequana* (Herrish-Schäffer)
1213 *Rhyacionia logaea* Durrant
1215 *Thaumatotibia leucotreta* (Meyrick)
1236a *Pammene herrichiana* (Heinemann)
1262a *Cydia deshaisiana* (Lucas)
1269a *Cydia injectiva* (Heinrich)

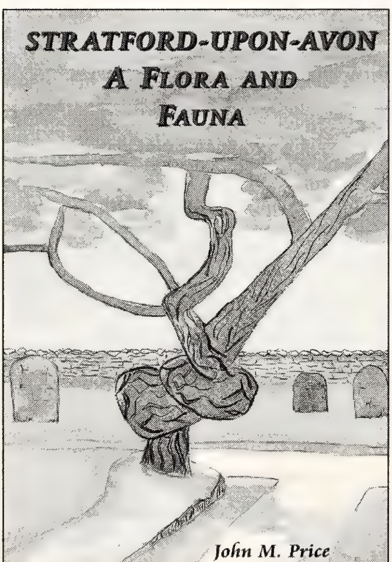
Additionally, a number of changes (some doubtfully correct), to either generic or specific names may also cause confusion. For clarity, these changes too are now listed. Changes to endings of names are not judged likely to cause confusion, however, and are omitted from this list:

228 *Endothenia trifoliana*	is 1103 *Endothenia ericetana*
267 *Argyroploce mygindianus*	is 1070 *Olethreutes mygindianus*
268 *Argyroploce arbutellus*	is 1071 *Olethreutes arbutellus*
269 *Phiaris metallicana*	is 1072 *Olethreutes metallicana*
289 *Loxoterma rivulana*	is 1068 *Celypha rivulana*
290 *Loxoterma aurofasciana*	is 1069 *Celypha aurofasciana*
297 *Phiaris schulziana*	is 1073 *Olethreutes schulziana*
288 *Loxoterma doubledayana*	is 1078 *Olethreutes doubledayana*
300 *Phiaris micana*	is 1075 *Olethreutes olivana*

301 *Phiaris palustrana*	is 1074 *Olethreutes palustrana*
286 *Loxoterma lacunana*	is 1076 *Celypha lacunana*
295 *Loxoterma obsoletana*	is 1077 *Olethreutes obsoletana*
355 *Epinotia rhomboidella*	is 1136 *Epinotia immundana*
385 *Phaneta pauperana*	is 1198 *Eucosma pauperana*
451 *Notocelia cynosbatella*	is 1174 *Epiblema cynosbatella*
452 *Notocelia tetragonana*	is 1180 *Epiblema tetragonana*
453 *Notocelia uddmanniana*	is 1175 *Epiblema uddmanniana*
454 *Notocelia aquana*	is 1178 *Epiblema roborana*
455 *Notocelia incarnatana*	is 1179 *Epiblema incarnatana*
456 *Notocelia rosaecolana*	is 1177 *Epiblema rosaecolana*
457 *Notocelia trimaculana*	is 1176 *Epiblema trimaculana*
458 *Coccyx posticana*	is 1208 *Pseudococcyx posticana*
459 *Coccyx turionella*	is 1209 *Pseudococcyx turionella*
500 *Cydia triangulella*	is 1260 *Cydia splendana*

If anyone is still lacking a copy of John Bradley's 2000 revision of the *Checklist of Lepidoptera recorded from the British Islands,* these may be obtained by post from D. J. Bradley, The Glen, Frogham, Fordingbridge, Hampshire SP6 2HS, price £12.50 plus £2.00 UK postage and packaging.

Stratford-upon-Avon: a flora and fauna by **John M. Price**. vi + 210 pp., 157 x 235 mm, paperback. ISBN 0 906802 09 1. Gem Publishing Company, 2002. £13 plus UK postage £1.50 (£2.50 overseas) available from Gem Publishing, Wallingford OX10 0QD.



This concise publication is a summary of the 3,426 species of plants and animals recorded within the town of Stratford-upon-Avon – a remarkable total given the restricted area and urban nature of the survey. It represents the work of several surveyors, pulled together and edited into comprehensive lists by the John Price, who also provides the introductory chapter. The total list includes 493 plants, 109 vertebrates and 2824 invertebrates. Of this latter total, 618 are species of Lepidoptera and 475 are Coleoptera, suggesting that the level of coverage achieved is fairly high. The list includes scientific name, English name and brief (usually one line) text mentioning local status.

The actual names in the list are unlikely to have a particularly great appeal to anyone who lives outside Warwickshire, but the whole work is of greater interest and significance to a wider audience. It represents a splendid summary of the wildlife in an urban area and will provide a solid, reliable foundation of data upon which conservation measures may be based.

Colin W. Plant

Societas Europaea Lepidopterologica (SEL)

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E-mail: willy.deprins@antwerpen.be

Societas Europaea Lepidopterologica (*SEL*) was founded in 1976 as a European Lepidopterological Society and it is a charitable registered Society in Germany without commercial intentions.
SEL furthers closer collaboration among lepidopterists Worldwide, supports scientific studies on the ecology, systematics, biogeography, biodiversity, and population biology of Lepidoptera, and takes part in the protection of species, where necessary, and in the conservation of natural biotopes of butterflies and moths in Europe and elsewhere.
SEL issues the scientific journal ***Nota lepidopterologica***, containing contributions in English, German and French predominantly on Palaearctic and Holarctic Lepidoptera (Editor: Dr. K. Fiedler).
SEL holds bianually **Congresses of Lepidopterology** in combination with its General Meeting (1978 Paris, 1980 Karlsruhe, 1982 Cambridge, 1984 Wageningen, 1986 Budapest, 1988 San Remo, 1990 Lunz am See, 1992 Helsinki, 1994 Lednice, 1996 Miraflores, 1998 Malle, 2000 Bialowieza, 2002 Korsør).

At present, **SEL** has about 650 members (individuals and associations) all over the World. The annual subscription is actually **35_** for individuals, and **45_** for associations, payable within the first quarter of the year. There is an admission fee of **2.50_**. Members receive *Nota lepidopterologica* and *News* (providing information within the Society).

If you agree with the aims of **SEL** and want to become a member, please make use of the application form below. Membership becomes effective only after payment of the subscription and the admission fee to the SEL Account **no. 195650507** at **Postbank Köln (bank code 370 100 50)** or to the local treasurer in your country (see list in *News*).

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Book Reviews and Notices

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WANTED: Specific butterfly collection data for inclusion in a planned systematic list of the butterflies of Micronesia, Melanesia and Polynesia plus the Bismarck Archipelago. Even common butterflies with reliable island data are valuable. JOHN TENNENT, 38 Colin McLean Road, Dereham, Norfolk NR19 2RY (E-mail: jt@storment.freeserve.co.uk).

WANTED: Information on the present whereabouts of any primary or secondary "type" material from Sotheby's sale of the National Butterfly Museum at St Mary's, Bramber, Sussex, in October 1983. In particular, contact with those believed to have bought relevant lots (e.g. "Woodward", "Bell", "Pearce") would be much appreciated. JOHN TENNENT, 38 Colin McLean Road, Dereham, Norfolk NR19 2RY (E-mail: jt@storment.freeserve.co.uk).

THE ENTOMOLOGIST'S RECORD
AND JOURNAL OF VARIATION

http://members.netscapeonline.co.uk/colinwplant/entrechome.html

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Notes

Continued on inside back cover

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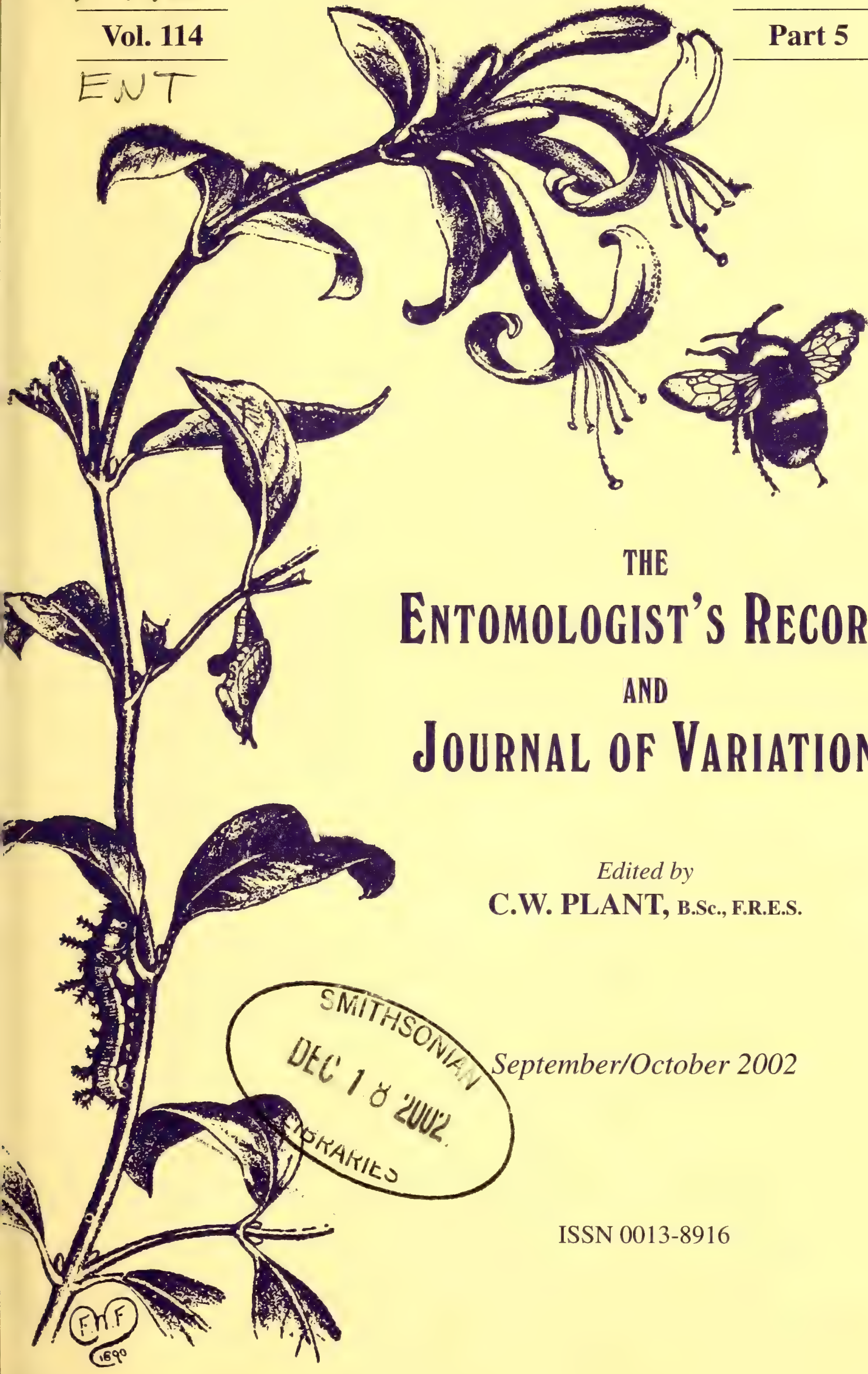

THE
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AND
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Edited by
C.W. PLANT, B.Sc., F.R.E.S.

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A NEW SPECIES OF *MEGASELIA* (RONDANI) FROM HAYLEY WOOD, CAMBRIDGESHIRE (DIPTERA: PHORIDAE)

R. H. L. DISNEY

Cambridge University Museum of Zoology, Downing Street, Cambridge CB2 3EJ.

Abstract

Megaselia symondsi **sp. nov.** (Dip.: Phoridae) is described from the canopy of an oak (*Quercus*) tree in Hayley Wood, Cambridgeshire.

Introduction

During July 2002 I helped run a course on Insect Systematics, under the auspices of the Cambridge University Museum of Zoology and the Cambridgeshire Wildlife Trust, using Hayley Wood nature reserve, Cambridgeshire, as our collecting site. This reserve has a rich scuttle fly fauna (Disney, 1987, 1988). During the course my colleague Martin Ellwood organised the fogging of the canopies of two oak trees, using a pyrethrin fog (Pybuthrin 33 – Aventis Environmental Science – 0.38% Pyrethrin w/w ($3gl^-$) synergised with Piperonyl butoxide). Among the Phoridae obtained was a single male of a new species of the giant genus *Megaselia* Rondani. It is described below and named after Ray Symonds, a colleague and a Warden of Hayley Wood nature reserve.

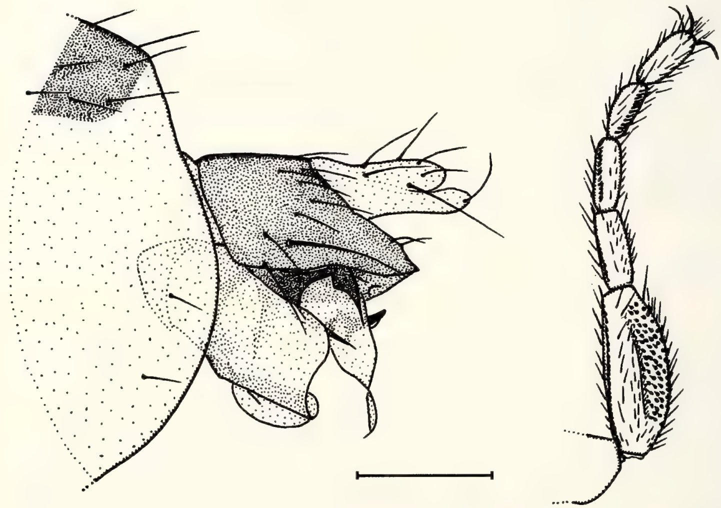
Megaselia symondsi sp. nov

Male

Frons brown, a little wider than long, with fine but dense microsetae and 58-60 hairs. Lower supra-antennal bristles shorter and slimmer than upper pair, which are about as far apart as pre-ocellars. Antials closer to anterolaterals than to upper SAs and almost directly below ALs, which are clearly higher on frons. POs further apart than either is from a mediolateral bristle, all four bristles being in an almost straight transverse row. Two bristles on cheek and a stronger pair on jowl. Postpedicel (third antennal segment) subglobose, brown but not dark, and with about ten unusually small SPS vesicles (being less than diameters of sockets of frontal hairs). Palps yellow with six bristles (the longest being between the upper and lower SAs in size) and as many hairs. Labrum pale straw yellow and with greatest width about 0.8 × that of postpedicel. Labella almost as pale and with only a few spinules below. Thorax brown. Each side of scutum with a humeral, three notopleurals, an intra-alar, a postalar and a prescutellar dorsocentral bristle. Mesopleuron with 7-8 small hairs and a bristle at rear margin. Scutellum with an anterior pair of short hairs (shorter than those at rear of scutum) and a posterior pair of bristles. Abdominal tergites dark brown with sparse small hairs, which are a little longer at rear margins of T4-T6. Venter pale straw yellow tinged grey (due to microscopic dentcles) and with fine hairs below on segments 3-6. Hypopygium brown, with a paler left lobe of the hypandrium, a straw yellow anal tube and as Fig. 2. The left lobe of the hypandrium is bare, broad and undulating. The brown right lobe is vestigial. Legs mainly light

brown with paler, straw yellow, parts, especially the distal two thirds of front coxa, parts of tarsi and of mid femur and tibia. Front tarsus as Fig. 1. Hairs below basal half of hind femur clearly longer than those of anteroventral row of outer half. Spinules of apical comb of hind tibia all simple. Wings about 1.0 mm long. Costal index 0.49. Costal ratios 3.12 : 2.24 : 1. Costal cilia only 0.05 mm long. No hair at base of vein 3. A single bristle on axillary ridge. Vein Sc clearly not reaching R1. Veins brown but 7 paler. Membrane lightly tinged grey. Haltere brown.

Holotype male, ENGLAND, Cambridgeshire, Hayley Wood, Grid ref. 52/2952, canopy of oak tree (*Quercus robur*), 10 July 2002 (*R. H. L. Disney*) (*Cambridge University Museum of Zoology*).



Figs 1-2. *Megaselia symondsi* sp. nov. male. (1) posterior face of front tarsus; (2) left face of hypopygium. (Scale bar = 0.1 mm).

Affinities

In the keys to the males of the British species of *Megaselia* (Disney, 1989) this species will run to couplet 48 where its combination of a bare left posterior lobe to the hypandrium and vein Sc not reaching R1 prevents progress. If one ignores the latter and proceeds to couplet 49 one finds the details of the hypopygium rule out any of the species of this section. In the keys to Palaearctic species of Schmitz (1957) it runs to couplet 20 on page 432, where the details of the hypopygium rules out both the species of this couplet. *M. romphaea* (Schmitz, 1947), formerly assigned to *Plastophora* Brues, will also run to this section. However, its anal tube is more massive and bears much stronger hairs at the tip of the proctiger.

The combination of the swollen front metatarsus with rows of modified hairs; a mesopleuron with hairs and a bristle; two hairs and two bristles on the scutellum; a differentiated bristle-like hair on each side of the epandrium; a large, bare, undulating left lobe of the hypandrium; short costal cilia; costa about half wing length; and a brown haltere, will serve to distinguish this species from those from other Biogeographic Regions.

Acknowledgements

My studies of Phoridae are funded by the Isaac Newton Trust (Trinity College, Cambridge.)

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Beautiful Hook-tip *Laspeyria flexula* (Lep.: Noctuidae) and Dingy Footman, *Eilema griseola* (Lep.: Arctiidae) new to Cheshire

The recently formed Cheshire Moth Panel is responsible for validation of records of scarce moths recorded within VC58. The current composition of the panel comprises the authors of this note. The panel has received information concerning two interesting records caught in 2001 in the village of Mouldsworth (O. S. grid reference SJ 512706) by Ian Landucci. On 6 July 2001,a Beautiful Hook-tip was caught at this site and on 30 July 2001a Dingy Footman was trapped. Both of these are new records for Cheshire (VC58).– A. Wander, S. McWilliam, S. Hind and K. McCabe, 16 Bramhall's Park, Anderton, Northwich, Cheshire CW9 6AH.

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WANTED: Records of insects and other invertebrates of all orders from within a 7-mile radius of Selborne village, Hampshire, for a book covering the wildlife of the Selborne area recorded since Gilbert White's death in 1793. Records of Lepidoptera published in recent reports and books specific to Hampshire have already been extracted. All records received will be gratefully acknowledged both on receipt and in the published work.– John F. Burton, In der Etzwiese 2, D-69181 Leimen-st. Ilgen, Germany (Tel & Fax: 00-49-6224-3578).

Evidence of dispersal in the Six-spot Burnet *Zygaena filipendulae* (L.) (Lep.: Zygaenidae)

Tremewan, in his masterly overview of the Zygaenidae (1985. *The Moths and Butterflies of Great Britain and Ireland* vol. 2, Harley Books), describes the burnets as essentially colonial and sedentary, but gives some evidence of dispersal presumably aided by the wind.

The Six-spot Burnet *Zygaena filipendulae* becomes increasingly coastal in northern Britain, as its distribution map (*loc. cit.*) shows. In Banffshire, it occurs abundantly along almost the entire coastline, but in the 13 years from 1990 I have never found any colonies even a short distance inland. However, during that time I have recorded four singles in July at my home address, situated on a slightly north-facing boggy hillside surrounded by mixed farmland around 160 metres above sea level. The years in question were 1991, 1992, 1996 and 2002. Although the right foodplants are present, no larvae or cocoons have ever been found and I am sure that the moth is not resident anywhere in the surrounding area.

The assumption must be that the four singles were strays from the coast, a minimum of 11 kilometres to the north. Certainly the wind had been northerly for several days prior to the finding of the 2002 example. Interestingly, at least three of the moths were females in good condition and apparently gravid.– Roy Leverton, Whitewells, Ordiquhill, Cornhill, Banffshire AB45 2HS.

A belated record of *Clitostethus arcuatus* (Rossi) (Col.: Coccinellidae) from East Suffolk

Alex Williams' note (2000, *Ent. Rec.* **112**: 174) on the occurrence of the *Red Data Book* category 1 (Endangered) ladybird *Clitostethus arcuatus* in central London, prompts me to place on record the capture of a single specimen by beating ivy *Hedera helix* clothing an isolated ancient oak on the Shrubland Estate, Coddenham (O. S. grid reference TM 1153) on 28 October 1983. *Clitostethus arcuatus* was added to the Suffolk List by E. A. Elliott (1929. The Coleoptera of Suffolk. Second Supplement. *Trans. Suffolk Nat. Soc.* **1**: 121-126) on the basis of eight specimens taken by Claude Morley inside his ivy-covered house at Monk's Soham (grid reference TM 2065) between 6 May 1927 and 24 August 1928. Morley had not seen it there before this, despite having lived in the property since 1904. Interestingly, the beetle could not be beaten from the ivy on the house. These specimens are in his collection at Ipswich Museum together with numerous other examples taken from his windows between 1933 and 1945. Following Morley's death in 1951, new owners removed the ivy from the property. I am unaware of any other Suffolk captures of the beetle.

I thank Lord de Saumarez for permission to record on the Shrubland Estate and Mr. D. Lampard (Curator, Natural History) for access to the Morley collection at Ipswich Museum.– David R. Nash, 3 Church Lane, Brantham, Suffolk CO11 1PU.

A NEW SPECIES OF URANIIDAE (LEP.) AND A NEW SPECIES OF LIMACODIDAE (LEP.) FROM FIJI

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Abstract

A recent collection of Lepidoptera from Fiji has revealed two previously undescribed species. These are described here as *Phazaca nakula* sp.n. (Uraniidae) and *Beggina bicornis* sp.n. (Limacodidae).

Family: Uraniidae

Genus: *Phazaca* Walker, 1862, *List Specimens Lepid. Insects Colln. Br. Mus.* 27:21.

Two species of *Phazaca* are recorded from Fiji – *P. cythera* (Swinhoe, 1902) and *P. yasawa* (Robinson, 1975) comb. n. Robinson (1975: 314) refers to a single worn specimen which appears to represent a third species. His description is consistent with the species described here. This is very similar to *P. cythera,* and the male and female of both species are illustrated in Plate K, Figs 1-4.

Phazaca nakula sp.n.

Male: (Plate K, Fig. 1) Expanse 14-16 mm. Body pale greyish brown. Antennae dentate. Forewing greyish brown, with traces of a darker brown post-medial band, especially around and just below the reniform. A series of four black apical dots, of approximately equal size. Hindwing similarly coloured, with a white section in the anterior third, running the full length of the costa, but not extending to the distal margin below the apex. The distal margin of the white section meets the costa at an acute angle of between 50 and 60 degrees, and the white colouration includes the apical tuft. The general brown colouration is suffused with darker reddish brown adjacent to this white section. Genitalia with aedeagus showing multiple, curved cornuti, arranged in two groups. (Fig. 1a).

Female: (Plate K, Fig. 2) Expanse 15-17 mm. Similarly patterned to the male. Antennae filiform. Genitalia with bursa copulatrix showing signum in the form of a star, with approximately twenty radiating points of roughly equal length (Fig. 1c).

Diagnosis: The presence of the white section in the hindwing serves to differentiate *P. nakula* from *P. yasawa*, in which the hindwing is a uniform greyish brown. *P. nakula* is somewhat smaller than *P. cythera* (expanse 16-23 mm), from which it may most easily be separated by the shape and extent of the white section (see Plate K). In *P. cythera,* the distal margin of the section meets the costa at an angle of between 90 and 100 degrees, compared to the acute angle in *P. nakula.* In *P. nakula*

the white section includes the apical tuft, which is itself white; in *P. cythera* it terminates on the costa before the tuft, which is brown. In *P. nakula,* the posterior margin of the section is smooth, whereas in *P. cythera* there is a prominent notched indentation at just over one half. The apical dots on the forewing may also be diagnostic characteristics. In *P. nakula* there are four of approximately equal size, whereas in *P. cythera* there are three, with the middle one considerably larger than the other two.

Although the general form of the male genitalia is somewhat featureless, the aedeagus shows good diagnostic features. *P. nakula* has multiple cornuti arranged in two large, prominent groups (Fig. 1a), whereas *P. cythera* has a single structured cornutus (Fig. 1b). In the female, both show a star-like signum, displaying approximately twenty points. In *P. nakula* these are of roughly equal length (Fig. 1c), whereas in *P. cythera* the points are of widely varying lengths, and the overall size is considerably greater (Fig. 1d).

Holloway (1998: 128-129) discusses three closely related species from Borneo. *P. cesena* (Swinhoe, 1861) shows clearly defined postmedials on both wings which are largely absent in *P. nakula*. In the male genitalia, the aedeagus of *P. cesena* lacks the prominent group of conuti shown in *P. nakula.* In the female genitalia of *P. cesena*, the signum is approximately twice the diameter of that in *P. nakula*. In *P. monticesena* Holloway 1998, the white hindwing costal zone is of a clearly different shape to that in *P. nakula*, and in the female genitalia the signum is similar to that of *P. cythera*. In *P. cesenaleuca* Holloway 1998, the white hindwing costal zone is absent.

Distribution: Six males and five females taken in coastal rain forest adjacent to coconut plantations at Nakula Estate, Cakaudrove Province, North-Eastern Vanua Levu from 1995 to 1998.

Holotype: ♂ FIJI, Vanua Levu, Cakaudrove Province, grid ref: S22/2213, 1.i.1998, *J.A. Clayton.*

Paratypes: 2 ♀ 27.v.1995, 22.ix.1997, 3 ♀ 27.ix.1997, 2.i.1998, 2.i.1998, other data as holotype. The other specimens are in poor condition, and have therefore not been included in the type series.

Family: Limacodidae

Genus: *Beggina* Hering in Seitz, 1931, *Macrolepid. World* 10:702.

Robinson (1975: 317-320) discussed this genus, with particular reference to its degree of radiation in Fiji, and figured the male genitalia of the Fijian species. He noted it as containing seven species; the type species *B. lymantrina* Hering from the Solomon Islands, and six species, *B. albifascia* Robinson 1975, *B. dentilinea* Robinson 1975, *B. minima* Robinson 1975, *B. mediopunctata* Hering 1931, *B. zena* Robinson 1975 and *B. unicornis* Robinson 1975, endemic to Fiji. All except *B. mediopunctata* were found to occur in very low numbers.

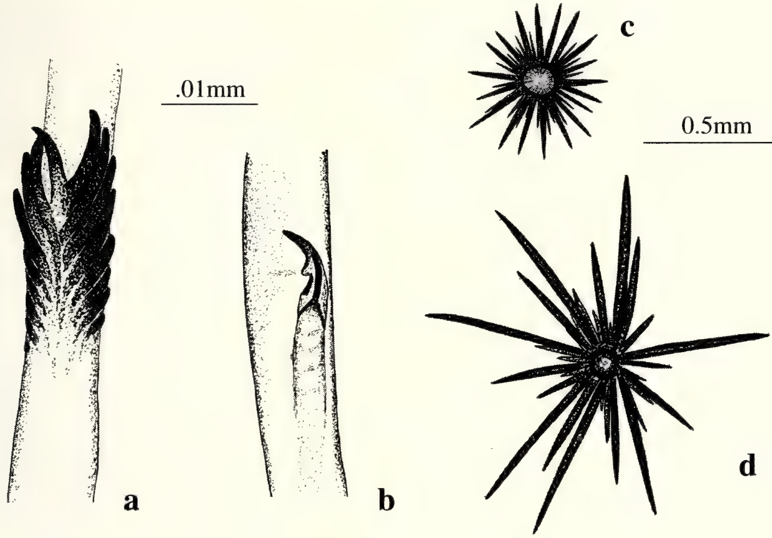

Fig. 1: *Phazaca* spp.
detail of aedeagus – a: *P. nakula* sp. nov. paratype; b: *P. cythera* Swinhoe signum of female
c: *P. nakula* sp. nov. paratype; d: *P. cythera* Swinhoe

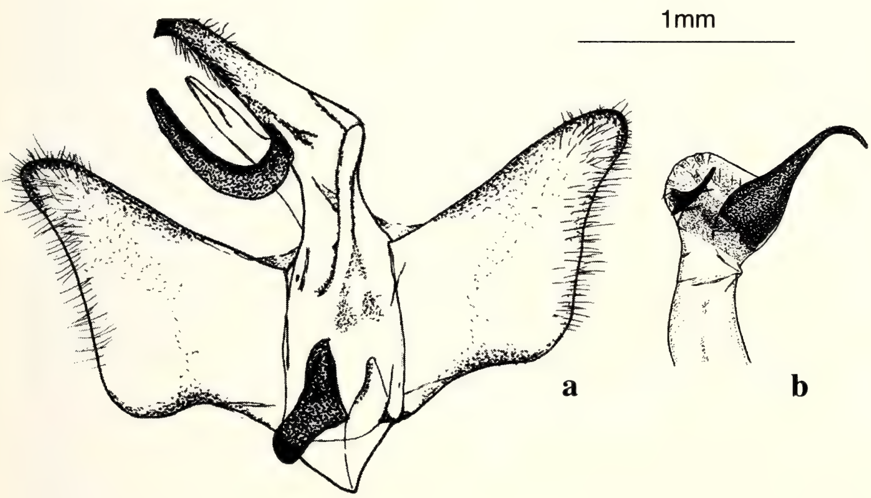

Fig. 2: *Beggina bicornis* sp. nov.
a: holotype male genitalia; b: detail of holotype male aedeagus

Beggina bicornis sp.n.

Male: (Plate K, Fig. 5) Expanse 18mm. Body warm brown. Antennae bipectinate throughout, the longest pectinations being one fifth the length of the antennae. Forewing uniform warm brown, flecked with a few paler, yellowish scales, especially posteriorly and distally. No visible lines or bands. Hindwing pale cream, with light pinkish-brown suffusion, mainly anterio-distally. Fringes pale pinkish brown. Genitalia (Fig. 2a) with gnathos lightly sclerotised, almost reaching tip of uncus. Juxta forming a short digital process. Valves with bulbous broadening at two fifths, wider than at base. Aedeagus (Fig. 2b) large. Apex produced into two pointed sclerotised processes, one much larger than the other and bulbous at the base.

Female: Unknown.

Diagnosis: The plain forewing serves to separate *B. bicornis* from other Fijian *Beggina* species, except small, poorly marked examples of *B. mediopunctata,* from which it may be distinguished by the paler hindwing. In the male genitalia the shape of the valves is diagnostic, as are the two apical processes on the aedeagus.

Distribution: Known from a single male taken in relatively undisturbed rain forest at an altitude of 200m, Namosi Hills, Viti Levu.

Holotype: FIJI, Viti Levu, Namosi Province, grid ref. N29/3978, 12.xii.1996, *J.A. Clayton.*

All types and genitalia slides of both species have been deposited in the National Museums of Scotland, Edinburgh.

Acknowledgements

I would like to thank Dr K. P. Bland of the National Museums of Scotland for helpful discussions and advice, and for arranging access to the entomological collections and other facilities at the Museum.

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1


2


3


4


5

Plate K.
Phazaca
1: *Phazaca nakula* sp. nov. Holotype male
2: *Phazaca nakula* sp. nov. Paratype female
3: *Phazaca cythera* Swinhoe male
4: *Phazaca cythera* Swinhoe female
5: *Biggina bicornis* sp. nov. Holotype male

A lucky escape for a vine weevil (Col.: Curculionidae)

On 8 August 2002, whilst looking around a friend's garden in Forest Hill Road, East Dulwich (OS grid reference TQ 348744), I saw an unusual-looking weevil crawling across the path. It was an *Otiorhynchus*, but its white elytra made it unlike any British species I had ever seen. Closer examination showed that it seemed to be a specimen of the Vine weevil *Otiorhynchus sulcatus* (Linnaeus) with its elytra almost entirely white. The mystery was solved under a lens – it was a vine weevil that had been wrapped in spider silk. The weevil's hind legs and elytra had been completely trussed up, but its other four legs were free and it was using these to crawl in an ungainly fashion across the path. There was no sign of a spider's web in the immediate vicinity although there were plenty of orb webs throughout the garden. It is fascinating to speculate that having been captured in a web and wrapped in the spider's flocculent wrapping silk, the weevil had proved too tough for the spider to bite and had made its laborious escape.— Richard A. Jones, 135 Friern Road, East Dulwich, London SE22 0AZ (E-mail: bugmanjones@hotmail.com).

Figure 1. A vine weevil *Otiorhynchus sulcatus* wrapped with spider silk.

A specimen of *Catocala nymphagoga* (Esper) (Lep.: Noctuidae) taken at light in Middlesex (VC 21), the third British example

On the morning of 5 September 2002 I visited Buckingham Palace Garden to examine and identify the light trap catch from the previous two nights. The trap is an old metal Robinson model, now fitted with a 160 watt blended bulb, and is situated on the top of a mound near the south-west corner of the garden surrounded by trees.

The first few egg cartons examined contained nothing out of the ordinary, in fact nothing much at all. There was, however, some indication of possible migrant activity as a couple of Diamond-backed moths *Plutella xylostella* (L.) were present. On lifting one of the cartons a slightly worn noctuid was spotted in the bottom of the trap. Despite its poor condition, it was immediately identified as a specimen of *Catocala nymphagoga* (Esper, 1787), the Oak Yellow Underwing (Plate L). I am familiar with this species, both from my moth monitoring work in the Balearic Islands and because I was involved in confirming the identity of one of the original British specimens twenty years ago. I have to admit to being quite excited at this point as I realised that this species was quite a rarity in Britain. The rest of the trap contained nothing of note, apart from a few more *xylostella*, so the total catch for the morning was 154 moths of 34 species, but including one extremely good one!

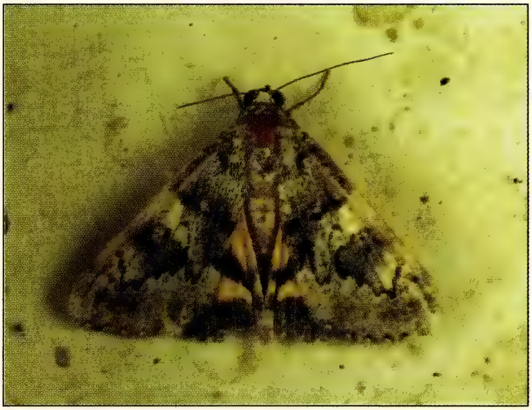

Plate L. *Catocala nymphagoga* (Esper, 1787), the male example taken at light on 5 September 2002 in the grounds of Buckingham Palace (VC 21)

As usual, I reset the trap ready for next week and then went to find Mark Lane, the Head Gardener, to give him the news. My recollection at the time was that this specimen of *nymphagoga* was only the third British example, and this was confirmed when I returned to the Museum. The two previous British examples were both taken in late July 1982, one in Wales and the other in Hampshire (*Ent. Rec.* **95**: 133-134). A search of the literature revealed no additional records. It would appear that Britain is the only country in northern European where *C. nymphagoga* has been found, even as a migrant. In fact, on checking Karsholt & Razowski (1996. *The Lepidoptera of Europe*) and the Museum collection, its normal distribution is southern and eastern Europe (Portugal, Spain, France, Corsica, Sardinia, Sicily, Italy, Malta, Switzerland, Austria, Czech Republic, Slovakia, Hungary, Romania, (former) Yugoslavia, Albania, Bulgaria, Greece, Crete, (former) Soviet Union, Cyprus, Turkey and North Africa.

I thank Geoff Martin (The Natural History Museum, London) for taking the digital images from which the figure of the adult moths has been produced.– M. R. HONEY, The Natural History Museum, Cromwell Road, London SW7 5BD.

Plate M. *Catocala nymphagoga* (Esper).

1: the male example taken at light on 5 September 2002 in the grounds of Buckingham Palace (VC 21)

2: a male example from the collection of The Natural History Museum, London (for comparison)

Notes on the population crash of *Aglais urticae* L. the Small Tortoiseshell butterfly

Having recently moved to Cambridgeshire from the Isle of Skye, it has been quite a surprise to witness at first hand the enormous reduction in population of *Aglais urticae* that has taken place in south-east England. The large numbers of *Buddleja* or "Butterfly Bushes" which grow in most gardens are almost totally lacking in butterflies. Only one or two *Vanessa atalanta*, *V. io* and *Polygonia c-album* are occasional visitors. I had noticed the mention of this in last years entomological notes (Allen, 2001. *Ent. Rec.* **113**: 261-262), but I had not appreciated the full extent of this disaster.

The millions of *A. urticae* which once gave pleasure to nature lovers of all ages, have almost entirely disappeared. I have seen only one individual this summer. Apparently the situation has been deteriorating for at least three years. The cause of this dramatic population crash of one of our commonest butterflies is of primordial interest to all lepidopterists and remains a mystery. Any information that might help us to understand the reasons behind this disaster should be presented and discussed.

On the Isle of Skye, *A. urticae* was still fairly common on the Waternish peninsular in 2001. Colonies of larvae were to be found wherever the foodplant grew in well-established clumps. Adult butterflies were common in sheltered gardens on sunny summer days and were also numerous during autumn and winter when they could be found hibernating on walls and ceilings in sheds and byres etc.

It has been suggested that the population crash of *A. urticae* is somehow related to global warming and that perhaps milder and wetter winters have caused the decline of the species. It has been proposed that warmer winters provoke an increase in metabolism, thus resulting in hibernating butterflies becoming active on sunny days. If this were the case, they would need a food source in order to maintain their activity. Unfortunately, in winter there are no flowers at which butterflies can feed and the result is death by starvation.

The evidence from Skye tends to oppose this suggestion. The normal winter conditions on Skye are relatively mild when compared with mainland Britain. The proximity of the sea and the warmer waters of the Gulf Stream make freezing temperatures and frosts much less frequent. Throughout the year rainfall and humidity are probably second-to-none in the British Isles and the island is always wet and humid. Atlantic winds are frequent, making suitable conditions for flight to take place extremely limited. Adult butterflies tend to remain in the shelter of ravines and gullies. Despite these unusual climatic conditions, *A. urticae* has occurred in large numbers year after year. Nevertheless, the possibility that global warming is involved in the demise of *A. urticae* cannot be rejected until further evidence is submitted.

In 2001, I recorded an enormous population of *V. cardui* larvae in north-west Skye. Almost every plant of the common thistle had one or more larvae webbed into the upper leaves. I estimated that there were approximately two million larvae in the fields alongside the road for a distance of 25 miles. I raised a number of adults from larvae taken in the wild, mainly with the objective of determining if there were any

parasites or entomophagous fungi. Strangely, I did not see even one adult butterfly of this species in the wild, either before or after witnessing this unusual population boom. Having given some thought to the reasons behind the lack of emerging adults, I concluded that it was either predation by voles or adverse climatic conditions. There has been an enormous increase in vole populations throughout Skye and small mammals such as the vole often seek out caterpillars and/or chrysalids when in large numbers, resulting in a high density-dependant mortality. *V. cardui* is here also at its most northern limit of distribution, probably limited by climatic conditions. Unlike *A. urticae*, however, which can be said to be common, *V. cardui* is hardly ever seen on Skye in its adult stage.

This unusual disappearance from south-east England of one of our commonest butterflies may be a biological indicator of some importance, particularly so when correlated with a similar drastic reduction in population of one of our commonest moths, *Arctia caja* – the Garden Tiger. Have any of our government entomologists carried out investigations of this unusual occurrence? Has the population ecology of *Aglais urticae* been studied and, if so, what were the main causes of mortality? Could changes in pollution levels (such as that which affected the Common Sparrow) or UV radiation be involved? Allen (*op. cit.*) mentioned a similar observation in the Slovak Republic almost ten years ago, so the cause of this dramatic decline is perhaps widespread. I am sure that many of our readers and members of the general public would like some answers to these questions.– LEONARD MCLEOD, 22 Maris Green, Great Shelford, Cambridge CB2 5EQ.

INVITED COMMENT

We have recently been studying the decline of the Garden Tiger moth, *Arctia caja* using data collected from the standard Rothamsted Insect Survey light-traps over Great Britain from 1968-1998. We have found that, among traps that captured Garden Tiger moths, the average number captured per year fell 28% (from 4.2 to 3.0), mostly during the mid-1980s (Conrad, Woiwod and Perry, 2002 *Biological Conservation* **106**, 329-337). Furthermore, the proportion of traps capturing Garden Tiger moths fell 30% (from 0.60 to 0.42). Thus, in 1990s, there were fewer light-traps catching fewer moths than in the 1960s and 1970s. Moreover, the greatest decline in Garden Tiger numbers has been in the south-east of England and populations in the north-east of Scotland increased slightly in the 1990s. The Garden Tiger moth is not near the limits of its range in the UK, but our regression modelling showed that low numbers of Garden Tigers are associated with warm, wet winters and rapidly warming springs. This is the type of weather which is expected to occur more frequently as a result of global warming, suggesting that the future may not be good for the Garden Tiger moth in much of the UK. It seems that the decline in the small tortoiseshell butterfly, *Aglais urticae*, noted by Leonard McLeod is a more recent phenomenon and it is not yet clear whether it is just part of the natural fluctuations of this species or part of a longer climate related trend. — KELVIN CONRAD AND IAN WOIWOD, Rothamsted Insect Survey, Harpenden, Hertfordshire AL5 2JQ.

THE LAST INSTAR LARVAL MOUTHPARTS OF *MICRODON MUTABILIS* (L.) AND *M. MYRMICAE* SCHÖNROGGE *ET AL* (DIPT.: SYRPHIDAE)

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Research Branch, National Parks & Wildlife, 7 Ely Place, Dublin 2.

Abstract

Microdon myrmicae Schönrogge *et al.* and *M. mutabilis* (L.) *sensu* Schönrogge *et al.* (Diptera: Syrphidae) are discussed in relation to their larval mouthparts. It is evident that these features may be used to aid separation of the two taxa. A revised key to the puparia of European *Microdon* species is presented.

Introduction

Schönrogge *et al.* (2002a, b) base separation of their new species, *Microdon myrmicae*, from *M. mutabilis* (L.), on features of the developmental stages and ecology of these taxa. Although they do provide morphometric features to aid in distinguishing the adults, these features are difficult to measure correctly and interpret, and of untested application to *Microdon* populations other than those studied by Schönrogge *et al.* – which were all from either Britain or Ireland. This makes identification of the developmental stages of paramount importance in recognition of the species. Schönrogge *et al.* (2002a) also restrict application of the name *mutabilis* L., to populations of *M. mutabilis* that use the ant *Formica lemani* as host, on well-drained, open ground sites. Whether this nomenclatural act is justified is not at issue here, but in order to refer unambiguously to the taxon they now recognise as *M. mutabilis* it now becomes necessary to call it *M. mutabilis* (L.) *sensu* Schönrogge *et al.*, a practice that has been followed in this note.

In reviewing the larval and puparial features of *M. mutabilis* (L.) *sensu* Schönrogge *et al.* and *M. myrmicae*, Schönrogge *et al.* (2002a) do not refer to the larval mouthparts. Examination of the larval mouthparts, based on material provided by Karsten Schönrogge, demonstrates that they may be used to aid in separation of these two taxa. The feature involved is illustrated here, in Figure 1, and a modified key to the puparia of European *Microdon* species is presented, incorporating reference to this feature.

Key to puparia of European *Microdon* species

1. Surface of puparium covered in a network of shallow ridges, composed of setate papillae **3**
— most of dorsum of puparium smooth and bare, without setate papillae **2**

2. Anterior respiratory process c1.5 × as long as its maximum breadth; antero-dorsal edge of larval mouth hooks with a small, but distinct bulge (fig. 1b) ....
.... ***myrmicae*** Schönrogge *et al.*
— anterior respiratory process broader than high; antero-dorsal edge of larval mouth hooks smoothly curved (fig. 1c) .... ***mutabilis*** (L.) sensu Schönrogge *et al.*

3. Bare patches within the network of setate papillae no broader than the basal diameter of the posterior spiracular process **4**
— bare patches within the network of setate papillae including some on the dorsal half of the puparial surface which are 2× as broad as the basal diameter of the posterior spiracular process (anterior respiratory horns more than 2× as long as their basal diameter and very strongly curved)..***devius*** (L.)

4. Anterior respiratory horns more than 2× as long as their basal diameter and straight; distance between dorsal and ventral edges of mouth hook greater in the distal third of its length than in the median third of its length..........***analis*** (Macquart)
— anterior respiratory horns less than 2× as long as their basal diameter; distance between dorsal and ventral edge of mouth hook greater in the median third of its length than in the distal third of its length.......***miki*** Doczkal & Schmid (not known to occur in either Ireland or Great Britain)

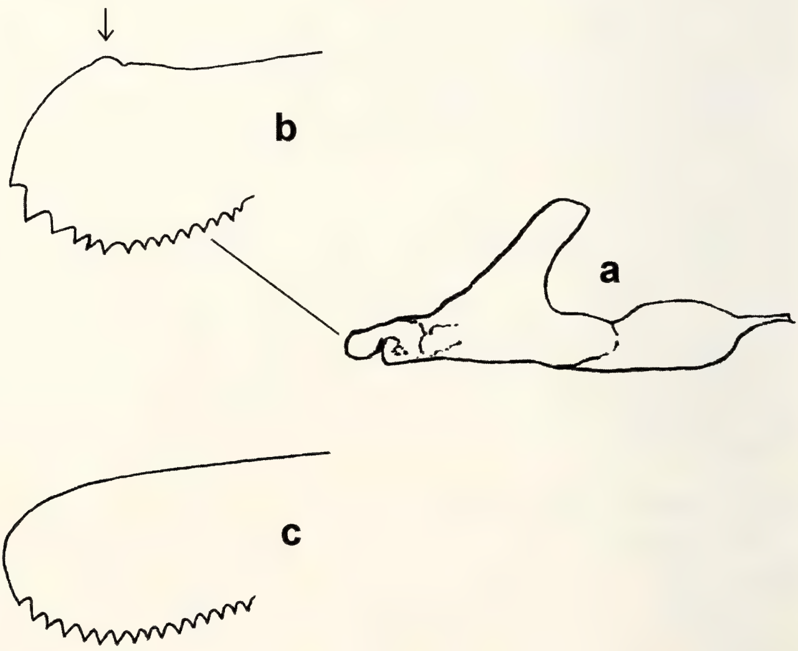

Fig.1: *Microdon* final instar larval mouthparts. a = mouthparts of *M.myrmicae*, as found attached antero-medially on the inner surface of the floor of the puparium; b = mouth hook of *M.myrmicae*, arrow indicating bulge on dorsal edge; c = mouth hook of *M.mutabilis* sensu Schönrogge *et al*, showing smoothly curved dorsal edge (see text).

The mouthparts of the mature larva are sclerotised and remain attached to the inner, ventral wall of the puparium, and so are available for examination in a recently hatched puparium. Karsten Schönrogge kindly provided me with empty puparia of both *M. myrmicae* and *M. mutabilis* (L.) *sensu* Schönrogge *et al*, complete with the plates carrying the anterior respiratory processes (henceforth referred to as ARP), which are diagnostic for these taxa. The larval mouthparts were carefully removed from these puparia (n = 4, in each case), and compared, revealing the differences in the mouth hooks alluded to above. The possibility of distinguishing these two taxa based on features of the larval mouth hooks extends the range of identifiable material to include puparia from which the ARP have been lost, but the larval mouthparts remain attached. This may seem only a marginal improvement in the previous situation. However, the ARP are located on a plate which is burst open during the process of eclosion of the adult insect from the puparium, the separate pieces of this plate then usually becoming detached from the puparium. Freshly hatched puparia collected from an ants' nest may thus lack the ARP, rendering them unidentifiable if determination is based entirely on ARP features. The larval mouthparts are not affected by eclosion of the adult and thus remain attached to the puparium. For how long empty puparia of *M. myrmicae* may remain available after eclosion of the adult is uncertain, since the ant host (*Myrmica scabrinodis*) apparently normally destroys the empty puparia (Schönrogge, pers. comm.). However, puparia of *M. mutabilis* (L.) *sensu* Schönrogge *et al.* are not so immediately destroyed by their ant host (*Formica lemani*), so the potential for confirmation of their identity from examination of attached larval mouthparts could prove useful. It is to be hoped that the differences in their larval mouthparts can also be used in confirmation of the identity of the larvae of these two *Microdon* species.

Acknowledgements

I am extremely grateful to Karsten Schönrogge for puparia of both *M. myrmicae* and *M. mutabilis* sensu Schönrogge *et al.*, and for his considerable patience in answering my numerous queries concerning *M. myrmicae*.

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– , (2002b) Addendum. When rare species become endangered: cryptic speciation in myrmecophilous hoverflies. *Biological J. Linn. Soc.* **76**: 315.

More new arrivals of Lepidoptera to Edinburgh

Recently I reported (*Antea.*, 164) the discovery of *Phyllonorycter leucographella* (Gracillariidae) breeding on *Pyrracantha coccinea* in Edinburgh. To this recent arrival I can now add a few more:

***Cacoecimorpha pronubana* (Hb.)** (Tortricidae). This species was reared from larvae in rough spinnings of leaves on the ornamental shrub *Prunus lusitanica* L. collected at Mayfield (O.S. Grid NT 2671), Edinurgh, on 13.v.2002. Imagines emerged 16.v.& 25.v.2002. This is the first appearance of this species in Edinburgh.

***Caloptilia azaleella* (Brants)** (Gracillariidae). A single specimen came to MV light at Blackford (NT 2571), Edinburgh, on the night of 1/2.vi.2002. There is only one previous record for Edinburgh, namely one to m.v. light at the same place on 1/2.vii.2001. These records suggest that an outdoor existence for this species may be possible in Edinburgh.

***Epiphyas postvittana* (Walker)** (Tortricidae). A single female came to m.v. light at Blackford (NT 2571), Edinburgh, on the night of 1/2.vi.2002. This appears to be its first appearance in Edinburgh, although John Clayton took it in Dundee last year.

***Argyresthia trifasciata* Stdgr.** (Yponomeutidae). A single specimen of this species came to light at Blackford (NT 2571), Edinburgh, on the night of 8/9.vi.2002 suggesting it is resident locally. Larval workings have been seen several times in the last few years, but rearing was unsuccessful.

It would appear that immigration is currently in fashion.– KEITH P. BLAND, National Museums of Scotland, Chambers Street, Edinburgh EH1 1JF.

Unsuccessful search for the Orange Upperwing moth *Jodia croceago* (D.& S.) (Lep.: Noctuidae) at Coed Llyn Mair NNR, Snowdonia, 13 April 2002

It is often a criticism that searches which produced negative results for the target species are not written up, with the result that there may be no record that the site was ever searched. It is seldom that some useful information is not collected during a field excursion. With these two issues in mind, I report the following. A "Butterfly Guardians" workshop was held in Snowdonia on 13-14 April 2002 to discuss the survey and monitoring needs of the relevant priority moths listed in the UK BAP and Butterfly Conservation's National Action Plan for Wales. Videos showing clearwing luring and the discovery the previous week of the Belted Beauty *Lycia zonaria* in saltmarsh in Lancashire were particularly appreciated, the latter suggesting places on the north coast of Wales which may repay similar searches. After the indoor day session, we examined Coed Llyn Mair NNR for the Orange Upperwing *Jodia croceago* until nearly midnight. Most of the weather conditions were perfect. It was cloudy, dry and dead calm, but unfortunately the air temperature was only 4°C at

dusk and fell to 2°C. We found some young Beech trees *Fagus sylvatica* still bearing last year's leaves. Such saplings of Oak *Quercus* spp. and Beech are thought to be important in providing hibernation sites because adult Orange Upperwings have been found roosting amongst the dry leaves on the stems of such plants in the past. We also tried four other techniques recommended for this moth, including light-trapping, sugaring, wine-roping and searching the catkins of Sallows *Salix* spp. We found a large sallow in bloom, but it was too tall for us to reach most of the catkins. However, no moths of any type were seen when we scanned it with bright lights and binoculars. The sugaring and wine-roping produced no moths at all. Only the light trapping produced moths, the most noteworthy of which were several Frosted Green *Polyploca ridens*. This species was a pleasing first record for several of the recorders who were present, because they do not see it in the Bangor area from which they had come. A Robinson trap I operated all night less than one kilometre away at the Snowdonia National Park Centre at Plas Tan Y Bwlch produced 91 moths of 10 species in spite of the low temperatures. The catch included five Frosted Green, two Early Tooth-striped *Trichopteryx carpinata* and two very fresh Purple Thorn *Selenia tetralunaria*, but the bulk of the catch was made up of four *Orthosia* species, as is often the case in woodland at this time of year – the Common Quaker *Orthosia cerasi* (33 individuals), the Hebrew Character *O. gothica* (21), the Small Quaker *O. cruda* (10) and the Clouded Drab *O. incerta* (8).

I would like to thank Butterfly Conservation who provided financial support for this meeting, Nichola Davies of Butterfly Conservation for promoting it via the Butterfly Guardians project, and the staff of the Snowdonia National Park Centre for hosting it.– PAUL WARING, 1333 Lincoln Road, Werrington, Peterborough PE4 6LS.

Hazards of butterfly collecting. The most dangerous hazard of butterfly collecting – Bangladesh, June 2002

Somebody tried to kill me the other morning – well that might be overstating the case a bit, but it is true in the sense that I might easily have been dead. We were driving through the tea gardens of north-eastern Bangladesh on the way to one of the two areas with good fragments of Oriental rainforest. The tea gardens were lovingly planted a hundred or more years ago among gently undulating hills, in contrast to the completely flat floodplains that take up most of Bangladesh, 80% of which is flooded during two months of the year. So great is the contrast that it is hard to remember that the highest point in our working area is 56m above seas level. The hills and tea gardens start where the floodplain ends and probably only 20,000 years ago the plains were ocean and the silting-up process is so recent that a large part of Bangladesh differs in size and location every year as the monsoon rivers fight their way through the flooding to the sea, dislocating the topsoil.

This means that tea actually grows at sea level, which I have never seen before, since tea is usually grown at 700 to 1,800m. It is still fine tea, though not reaching the quality of Assam tea from higher altitudes next door in India. The low altitude is presumably also responsible for a denser grid of shade trees, especially tall *Cassia* – this tree

is the main host plant for three species of Pieridae (*Catopsilia pomona* Fabr., *C. pyranthe* L. and *Eurema blanda* Boisd.), which sometimes fly in unbelievable quantity under the canopy.

The road was a beautiful avenue with mature trees on both sides and quite wide – two buses could pass without either being forced out on the narrow hard shoulder. At this pleasant point we were overtaken by one of these new "people-carriers" which takes ten people or so (make that 25 in Bangladesh). We were going about 65 km/h but there were no obstructions or other cars ahead, so we were not worried that overtaking proceeded quite slowly. But suddenly, the car turned in abruptly well before having passed us fully. It hit the right front mudguard of our Toyota Corolla in a most audible manner. To my mind this is a truly dangerous situation. If you move left, you risk being forced into the bordering trees. If you over-correct to the right, you risk suddenly finding the other car pushed in front of you, broadside view. Anyway, my driver and butterfly assistant, Jamal, did the right thing. He turned just enough right to make us avoid going off the road and pushing the other car back on an even course. And then the other guy did not stop.

I told Jamal we needed to stop him, look at the cars, and at least bawl him out, so off we went in a chase, my first car-chase ever. Within a few kilometres we had stopped him. He exited the car rather sheepishly, with another 24 inside looking forward to observing the proceedings. On getting out of the car we noticed that we were actually somewhat shook up. Jamal began berating the driver in choice and precise Bangla; he went on for some time, with the other driver emitting only the occasional squeak. We inspected the damage, no more than you might easily sustain while parked in Dhaka, and chances of getting any money out of the guy without hiring private goons ($10.00-15.00 a day depending on quality) were minimal. Jamal summarized his lecture for me, ending: "'He says has been a driver for ten years." – few people in Bangladesh actually have a driving license, and most of those who do have simply "purchased" it, so it is difficult to verify. "You tell him that if he normally drives like this he must have killed at least ten people and that maybe he should be thinking in terms of finding another profession." Jamal translated and the guy replied. When Jamal finally turned to me, I could see he was on the verge of bursting into laughter: "No boss ... he says he has only killed two people!"

We had a good couple of days' collecting in the small fragments of remaining forest. Friends and relatives with no experience of tropical forests usually assume that you are placing yourself in great danger – my mother was particularly good at this and hated every day I was away in the "bush". They see marauding elephants, dangerous animals, poisonous snakes, cunning forest crocodiles, hordes of noxious biting insects, leeches, electric eels, and quicksand – and to this the local population will add evil spirits and djinns, at least at night.

But our little story serves to point out that by far the greatest hazard of tropical butterfly collecting (or bird-watching or whatever) lies in getting to the increasingly remote remaining collecting spots. Bad roads, poorly trained drivers, a remarkable lack of anticipation, and overloaded vehicles in poor mechanical state – sometimes aided by hashish or country gin – combine to effect an incredible mayhem. Death

rates in traffic are usually 20 – 50 times higher than in my native Denmark whether measured by number of vehicles, kilometres of road, or passenger kilometres travelled. The death toll *per capita* is usually at twice that of Denmark despite the fact that on any given day less than 10% of the population is inside a vehicle.

When on the road in Africa you are either captive in some else's vehicle, and that is that, or you are driving very carefully in your own vehicle, but still never sure what is around the next corner. One firm step, though, can be taken to minimize danger: Never drive at night. My wife and I have had a pact on this since 1988 — and we have stuck to it.

How I wish my Norwegian friend and colleague, Jan Kielland had stuck to our resolution. In the dead of night of 9 October 1995, on a road in Tanzania, he hit an unlit and unmarked broken-down truck and was killed on the spot.– TORBEN B. LARSEN, Bangladesh, World Bank, 1818 H. Street N. W., Washington D. C., 20433, USA.

Longitarsus fowleri Allen (Col.: Chrysomelidae): an anomaly concerning foodplants and an unpublished Dorset record

It is fairly well established that the flea-beetle *Longitarsus fowleri* has foodplants in two different families, namely Labiatae and Dipsacaceae – an unusual state of affairs in a non-polyphagous species. Whereas the former of the two is a favourite *Longitarsus* host-group second only to the Compositae, the latter of them appears quite exceptional. The evidence in its favour being hitherto somewhat slight, a relatively recent occurrence of *L. fowleri* at Culver, Isle of Wight, "off *Dipsacus* 7.v.1988" (D. Appleton, MS) serves to strengthen it. Further, the late A. M. Easton met with the same species in some numbers at Fleet, near Weymouth, Dorset, on the same plant, in spring – year unknown to me (about 1980?) and record unpublished.

I am not aware of any specially close affinity between the two plant families in question. *Dipsacus* (Teasel) is so conspicuous that it is unlikely to have been overlooked at the Box Hill, Riddlesdown, and Otford sites, had it been present.– A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

The Dotted Chestnut _Conistra rubiginea_ (D. & S.) (Lep.: Noctuidae) in Sussex

This brief summary of the history of *Conistra rubiginea* in Sussex – published in much more detail in 1999 in *A Revised History of the Butterflies and Moths of Sussex* – supplements the highly interesting report of the moth's county by county colonisation of south-east England, apparently during the 1990s (*Antea*, 130).

The Dotted Chestnut has always been a West Sussex specialty. Even so, only half a dozen colonies were publicly known to the rapacious Victorian collectors, these being situated across the vice-county. The insect was always a great scarcity, but after 1902 it then went completely unrecorded for half a century. The first sign of recovery came in 1954, when A. J. Wightman encountered the moth in his home village of Pulborough. This report, and sightings made elsewhere during the next few decades, suggest that a southerly invasion from south-west Surrey into north-west

Sussex took place during that era – by 1973 the species had colonised suitable woodland as far south as Arundel, and by 1998 as far east as Storrington. Numbers also increased, until by the 1990s up to four specimens could be counted during an evening spent with a single mv light in the insect's leading localities. Although there have been further records made up to and including 2002, no significant events have come to notice since 1998.

C. rubiginea has never been unquestionably detected in East Sussex, although several dubious historical claims have been made during more than 150 years of entomological recording. The insect's local range is still restricted to the far western quarter of Sussex and is a little less than that held during the 19th century. However, a perhaps pioneering specimen whose identity was awaiting confirmation, captured by K. Ruff during late October 1992 at Burgess Hill - a town positioned just within the western vice-county boundary and 15 miles east of the nearest known colony - was, unfortunately, eaten by a mouse whilst left on the setting board.– COLIN R. PRATT, 5 View Road, Peacehaven, East Sussex BN10 8DE (E-mail: colin.pratt@talk21.com).

Eupecthecia egenaria H.-S. (Lep.: Geometridae): the first confirmed record in Oxfordshire (VC22 Berkshire)

On the night of 7 June 2002, I took an unusually large *Eupithecia* species at m.v. light, in my parents garden in Fernham, Oxfordshire (VC22 Berkshire). Although the specimen was worn, it was clear to me that it was not *E. intricata*, and was certainly too large to be *E. subfuscata*. I did notice that the specimen had a very broad subterminal line on both the forewing and hindwing, and was a good likeness to the specimen of *E. egenaria* figured in *An Identification Guide to the British Pugs* (British Entomological and Natural History Society). I set the moth and gave it to Martin Corley for dissection and, the next day, I was delighted to receive an e-mail from Martin confirming that it was indeed *E. egenaria*! Although this is the first confirmed record for VC22, there are two (possibly three) unconfirmed records for the county. These are:

> Silwood Park, near Ascot, Berkshire (VC 22), 25.v.2001 (George Tordoff). The specimen was retained, and is currently held by Graham Jones awaiting dissection.
>
> Abingdon area, Oxon (VC 22) during 1987. (per Martin Harvey). There are two records, by two different recorders listing slightly different site names. It is possible that they refer to the same moth and location. This data is held at the Oxfordshire Records Centre, and it is not known whether the specimen/s was kept or dissected.

The nearest Small-leaved Lime wood to Fernham is approximately 16 miles away, over the border in Wiltshire. There are, however, small pockets of common hybrid lime in and around the village. Perhaps this species has recently adapted to feeding on the common variety? This may well explain why it appears to be on the increase nationally. Another school of thought is that this particular specimen is a migrant.

Southerly winds had brought in warmer air from the Continent during the week, and the previous night's catch included the rare migrant Pyralid *Diasemiopsis ramburialis,* as well as *Orthonama obstipata*. There is a single record of *E. egenaria* from John Radford's migrant-rich garden in Walberton, West Sussex, on 1.vi.1987.

Nationally, *E. egenaria* appears to have expanded its range in recent years – or has been overlooked in the past? It was recently discovered as new to Worcestershire in 2001 by A. N. B. Simpson (*Ent. Rec.* **114**: 179-180), and has been found at several new sites in Norfolk, Suffolk, and Surrey.– STEVE NASH, 23 Henley Drive, Highworth, Wiltshire SN6 7JU (E-mail: steve@migrantmoth.com).

Three seldom-recorded *Lonchaea* spp. (Dipt.: Lonchaeidae) from the south-east London area

These brief notes relate to my home district of Blackheath, in north-west Kent (south-east London), in 1965 apart from the first. Page references are to Collin, 1953. (A Revision of the British (and some other) Species of Lonchaeidae (Diptera). *Trans. Soc. Brit. ent.* **11**(9): 181-207). A noteworthy point, in my experience, is the extreme rarity of males in the field, as a rule – *L. corusca* (see below) may be an exception. I have never found a male of any of the others (common as some are) except the following, which is one of the rarest.

Lonchaea hirticeps Zett. – When I took a male of this "little-known species" (to quote Collin, p. 189) on a blackberry leaf in my former garden in July 1961, it was on record from only five British localities – none of them south-eastern – with only one British male known (Herefordshire). The late E. A. Fonseca kindly identified the specimen, among many others.

L. corusca Czerny (= *lauta* Coll., *alni* Ringd.) – Females occurred on and about a dead beech, in a lane quite close to my garden, between May and July 1971. No males were found at large, but a few were obtained from under loose portions of bark. Predictably, the tree was cut down and removed shortly afterwards. Only six British examples were known to Collin in 1953 (p. 194).

L. peregrina Becker. – This species, our largest, was very little known when Collin wrote; he mentions four (all isolated) British examples, and Continental breeding-records from poplar. This last point is of interest in view of my experience which fully bears them out. I met with it not very uncommonly on dying and dead *P. italica* and *Populus nigra* both standing and also felled and cut up, in two places at Blackheath (vii.65 and 66) – rather often with *L. palposa* Zett., which I have found also at Abbey Wood (a district rather than a wood) and Charlton.– A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

Camberwell Beauty *Nymphalis antiopa* L. (Lep.: Nymphalidae) in Norfolk

On the 13 August 2002, following several days of dull weather, my wife and I were enjoying a leisurely breakfast in brilliant morning sunshine, sitting in the living room a few feet (through the open patio door) from a buddleia bush. We were discussing

the unusually large number of nymphalid butterflies on the bush, following a period when there had been little flying in our garden, when a magnificent Camberwell Beauty sailed across the patio to join several Painted Ladies *Cynthia cardui* L., Red Admirals *Vanessa atalanta* L., Peacocks *Inachis io* L. and a solitary Small Tortoiseshell *Aglais urticae* L. already feeding on the bush. Forty years ago, I might have dashed off to find a net; now, after the initial surprise, it was a camera that was required. Sadly, the butterfly flew off over the garage roof before I could take a photograph. Although, as one might imagine, a careful lookout was kept in the garden during the next few days, *antiopa* was not seen again.

Emmet & Heath (1990. *The butterflies of Great Britain and Ireland*, **7**(1), p. 208) state that *antiopa* retains its migratory propensities after migration and that although there are accounts of the presence of the same specimen in gardens for several consecutive days, suggest that duplicate recordings of different places (*i.e.* of the same individual), may be frequent. I had just returned to the UK from three months fieldwork. It transpired that my wife, who has never seen a Camberwell Beauty previously, had seen a "large black butterfly with yellow borders", also on buddleia in our garden, about two weeks previously. One wonders whether there were two specimens, or whether the same one had remained in the area for at least this period of time. I have often mulled over the reports of "rare" butterflies and birds and wonder what percentage of the true total of visitors is actually logged. The butterfly has to be seen by someone who recognises its significance – we live in a place where gardens, buddleia and other nectar rich plants abound, but I suspect none of my neighbours would appreciate what it was. I would not expect to see a Camberwell Beauty in the UK in my lifetime. Oddly enough, I had also seen *antiopa* about two weeks prior to this sighting – but in Fairbanks, Alaska!– JOHN TENNENT, 38 Colin McLean Road, Dereham, Norfolk NR19 2RY (E-mail: jt@storment.freeserve.co.uk).

Atheta (Acrotona) consanguinea (Eppelsheim) (Col.: Staphylinidae) new to East Suffolk and to East Kent

The British history of this very rarely recorded little aleocharine beetle was summarised by John Owen when reporting his capture of it in Windsor Forest in 1981 and 1982 (1983. *Ent. mon. Mag.* **119**: 198), with the beetle only known from broad-leaved woodland sites in East Sussex, Surrey, Hertfordshire and Berkshire.

On 26 May 2001, I sieved a single female example of *A. consanguinea* at Great Martin's Hill Wood, Capel St Mary, East Suffolk (O. S. grid reference TM 0936) by breaking up a rotten oak branch under a mature oak in this ancient woodland site. Discussing this capture later with Norman Heal, he told me that he had recently found a single male by sieving the well-rotted wood of an old stump (?oak, approximately 2.5m high by 1.25m diameter) in a small damp wood at Charing, East Kent (grid reference TQ 9549) on 22 September 2001. This site was subsequently visited by Alex Williams on 2 February 2002 who managed to secure a further four examples from the stump.

I thank Alex Williams and Norman Heal for allowing me to include their records and the first-named for determining the beetle for me.– DAVID R. NASH, 3 Church Lane, Brantham, Suffolk CO11 1PU.

XENODIPLOSIS LAEVIUSCULI (RÜBSAAMEN) (DIPT.: CECIDOMYIIDAE), A SPANGLE GALL INQUILINE NEW TO IRELAND

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Abstract

Xenodiplosis laeviusculi (Rübsaamen) (Dipt.: Cecidomyiidae) is recorded for the first time from Ireland. The species was reared from larvae found under the common spangle galls *of Neuroterus quercusbaccarum* L. (Cynipidae).

Hymenoptera

Robbins (1997) reported the discovery in Warwickshire, England, of the cecidomyiid *Xenodiplosis laeviusculi* (Rübsaamen) galling the asexual common spangle galls of the cynipid *Neuroterus quercusbaccarum* L. on oaks *Quercus*. Normally, the species affects the asexual smooth spangles of *N. albipes* (Schenck). On 2 November 2001, the author searched oaks in the Phoenix Park, Dublin (Irish grid reference O 0935) for *X. laeviusculi*. Large numbers of the orange larvae were found under common spangles. Despite the presence of numerous silk buttons of *N. numismalis* (Geoffroy in Fourcroy), cupped spangles of *N. tricolor* Hartig and smooth spangles, none of these were infested. As described by Robbins (1997), each larva inhabited a small space between the gall and the leaf. A small number of very small larvae were present in the sample. One spangle gall had two larvae within the space. The incidence of larvae on forty leaves is given in Table 1. Altogether 1,101 spangle galls were examined and 975 (88.55%) of these were unaffected by *X. laeviusculi*. A total of 44 (3.99%) spangle galls had larvae of *X. laeviusculi* while 82 (7.44%) had empty spaces. It is not known if these resulted from the death of larvae or early emergence. Because of the abundance of spangle galls on the Phoenix Park oaks, *X. laeviusculi* was very common there despite its low level of infestation (*c*.4%). The emergence of *X. laeviusculi* coincided with the emergence of adults of *N. quercusbaccarum* from the sexual currant galls on oaks in the author's garden.

Paralleldiplosis galliperda (Löw) is the cecidomyiid which is stated in the literature to be the inquiline in the spangle galls of *N. quercusbaccarum* while *X. laeviusculi* is associated with the smooth spangles of *N. albipes* (Skuhravá, 1986, 1997). Although the larvae of the former species are white according to Robbins (1997), Skuhravá *et al* (1998) describe the colour as orange-yellow. As a result, it was considered necessary to rear adults from the Dublin material since *X. laeviusculi* would be new to Ireland. Spangle galls containing larvae were carefully detached from leaves and placed lying on moist peat-based gardening compost in a small square bottle which was closed with a lid. Several larvae were observed crawling into the peat. The bottle was stored in an outside passage until March when it was brought indoors. In early May, some larvae were noted crawling on the surface of the peat and pupating. Others pupated within the compost. From 4 June to 13 June

Leaf number	number of unaffected galls	number of empty galls of *X. laeviusculi*	number of galls with larvae of *X. laeviusculi*
1	40	5	5
2	42	1	–
3	3	1	1
4	42	–	8
5	17	–	3
7	23	3	1
8	34	8	1
9	55	7	4
10	9	1	–
11	11	–	2
12	39	6	1
13	1	–	–
14	6	–	1
15	26	2	1
16	38	–	–
17	31	2	1
18	27	2	–
19	18	3	1
20	23	–	–
21	20	2	–
22	27	5	1
23	9	–	–
24	28	–	–
25	20	–	2
26	11	3	2
27	52	3	–
28	17	2	–
29	12	3	1
30	25	5	3
31	35	–	–
32	14	2	–
33	20	1	1
34	22	3	1
35	37	3	1
36	17	–	–
37	40	–	2
38	15	2	–
39	17	5	–
40	16	1	–

Table 1. Incidence of larvae of *Xenodiplosis laeviusculi* (Rübsaamen) in common spangle galls on forty oak leaves.

2002, 10♂♂ 10♀♀ of *X. laeviusculi* emerged. The identity of the males was confirmed using Skuhravá (1997) who provides excellent illustrations of the antenna and genitalia of the species. The male antennal segments are very distinctive. Each flagellomere has the middle part of the distal node so constricted that it appears to be divided into three nodes – each with one whorl of circumfilar loops. By contrast, the male flagellome of *P. galliperda* has the middle part of the distal node only slightly constricted. *X. laeviusculi* appears to be a poorly recorded species in Europe. Skuhravá (1986) and Skuhravá *et al.* (1998) give its distribution as the Czech and Slovak Republics, Germany and Great Britain. The larvae of *P. galliperda* are known to suck sap from the gall tissues of its host (Skuhravá *et al.*, 1998). The larvae of *X. laeviusculi* probably behave in a similar manner although little is known about is biology.

Voucher specimens have been deposited in the National Museum of Ireland.

Acknowledgement

The author is grateful to his daughter Helen for her help in collecting the spangle galls.

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Dingy Skipper *Erynnis tages* (L.) (Lep.: Hesperiidae) and Northern Brown Argus *Aricia artaxerxes* (Fabr.) (Lep.: Lycaenidae) apparently lost from the Banffshire coast after grazing ceased

The Dingy Skipper *Erynnis tages* maintains a curiously isolated population, well north of its main distribution in Britain, along the dry and sunny inner Moray Firth where the low annual average rainfall rivals that of East Anglia. In the past, the butterfly has extended as far east as Banffshire. There are nineteenth century records, and W. Slater found two colonies near Portknockie in the early 1960s (*Entomologist* **97**: 152). On these grounds, Barbour (1976) included Dingy Skipper in his list of the macrolepidoptera of Banffshire (*Ent. Rec.* **88**: 1-11). The Portknockie record appears as a dot for square NJ 46 on the distribution map in *The Butterflies of Great Britain*

and Ireland (Harley Books, 1990) but is not shown in *The Millennium Atlas* (Oxford University Press, 2001).

For Northern Brown Argus *Aricia artaxerxes*, the Banffshire situation is similar. Barbour (*loc. cit.*) mentions two colonies on the coast, one as recent as 1972, while the *MBGBI* map for the species gives two post-1970 dots, only one of which appears in *The Millennium Atlas*.

When I moved to Banffshire in 1990, there was no reason at first to suspect that anything had changed. North-east Scotland has escaped the worst excesses of habitat destruction so frequent further south – in fact, the overall pattern is one of gains (Speckled Wood *Pararge aegeria*, Ringlet *Aphantopus hyperantus*, and recently Peacock *Inachis io*). However, in spite of an ever-increasing amount of fieldwork over the following years I failed to find Dingy Skipper or Northern Brown Argus. In 1995 Rosemary Smith and I walked 40 kilometres of the coastline during a survey of the Small Blue *Cupido minimus*, but saw neither of the other species.

There remained the possibility that I was not looking in the right places. Thus, I was delighted to make contact with Bill Slater himself, the author of the original records, who agreed to take me to the exact spots near Portknockie where he had found the butterflies as a boy. On 4.vi.2002, we visited his main Dingy Skipper site in reasonably good weather conditions. It was a small cove I had checked several times without success in previous years. The habitat did not look right: there was scarcely any of the bare ground that the butterfly likes, and very little trefoil or vetch for foodplant. Disappointed, we went next to his second site for Dingy Skipper as well as Northern Brown Argus. I was about to walk straight past until he called me back. The habitat, a large sheltered hollow amongst the cliffs, was even more unsuitable than the first, being wholly overgrown with coarse rank vegetation dominated by tall grass, bracken, gorse and bramble. There was no sign of any rockrose *Helianthemum* and only a few patches of trefoil or vetch. Clearly both butterflies were long gone. Here and there was a sad indication of what the habitat must once have been like – the remains of huge anthills perhaps centuries old, now shaded out and unoccupied. It was easy to imagine them topped with flowery cushions of rock-rose and thyme.

Why had the cliff habitat deteriorated in this way? In many places on the Banffshire coast long-derelict fence lines can be seen, running up and down the slopes. Had the cliffs once been grazed? Indeed they had: hardy sheep brought in from farms in Orkney and the Hebrides used to be over-wintered on the braes, as the cliffs were known. To maintain the quality of the grazing, coarse invasive vegetation was regularly controlled by burning. Now, both practices have largely died out, and the few Roe Deer present make little impression.

There are obvious management implications for the conservationist here. Heavy grazing certainly depresses insect populations, but at least it provides a stable situation. If such grazing is reduced or stopped, butterflies in particular often undergo a population explosion, apparent proof of how harmful the grazing had been. Unfortunately this tends to be followed by a long slow decline to extinction as

vegetation succession insidiously destroys the habitat. I feel it is important to put this clear-cut instance on record.

Fortunately the Dingy Skipper still survives on coastal shingle in Moray to the west, while colonies of Northern Brown Argus flourish further inland in Banffshire, on limestone around Tomintoul. There are twenty or more Small Blue colonies along the Banffshire coast where natural erosion of the cliffs maintains suitable conditions for the foodplant, Kidney Vetch *Anthyllis vulneraria.*

I thank Bill Slater for his help and input. — ROY LEVERTON, Whitewells, Ordiquhill, Cornhill, Banffshire AB45 2HS.

Cryptocephalus bipunctatus (L.) (Col.: Chrysomelidae) in Perthshire

In April 1999, a male and female (*in copula*) of the splendid black and orange beetle *Cryptocephalus bipunctatus* (L.) were found on the south-facing cliffs of Kinnoull Hill, Perthshire (O.S. grid reference NO1322; VC 89). They were kindly identified for me by Magnus Sinclair. On 12 August 2000, an obviously gravid female of the same species was found at the same place. These seem to be the most northerly British records for the species to date. The only previously published Scottish records are from the south-west of Scotland, namely Kirkcudbrightshire (VC 73) (*Annals Scot. Nat. Hist.* **1892**: 112) and Wigtownshire (VC 74) (1973. *Ent. Mon. Mag.* **109**: 112). The current discovery is unlikely to be a recent colonisation as a decade ago, on 9 June 1990, I found the case-bearing larva of a *Cryptocephalus* species on the same part of Kinnoull Hill. It was in short turf near a small larch *Larix* tree. The case was about six millimetres long and superficially resembled a rabbit faecal pellet or the leaf-bearing nodule off a larch twig. It could conceivably have belonged to the present species, but attempts to rear it failed.– KEITH P. BLAND, National Museums of Scotland, Chambers Street, Edinburgh EH1 1JF.

Cimbex connatus (Schrank) (Hym.: Cimbicidae) at a Devon supermarket car park

Cimbex connatus is the rarest of the three British *Cimbex* species. It had been reported from several locations in southern England in the early part of the twentieth century, including Devon, where it was last reported as larvae on alder at Leighan Valley in 1947 (Benson, 1951. Hymenoptera: Symphyta Section (a), *Handbooks for the identification of British insects*, **6** (2a)). After that, a lack of records led to the belief that it had become extinct in Britain. In 1997, a female was found near the River Nadder near Compton Chamberlayne, Wiltshire (Edmunds & Springate, 1998. *Br. J. ent. nat. Hist.* **11**: 65-68).

The presence of this scarce sawfly at Barton, near Torquay, Devon (O. S., grid reference SX 907 666), was drawn to my attention in early October 2000 when larvae were sent to me for identification. They were feeding on alder (*Alnus* sp.) leaves on trees that had been planted for landscaping purposes around a car park for

a Sainsburys and Marks and Spencer stores. None of the other British *Cimbex* species feed on alder so it was thought likely that the larvae could be those of *C. connatus*. The larvae were retained, but although they produced cocoons, no adults were reared.

More larvae were sent from the same source in September 2001, but so far these have also failed to produce any adults. However, on 19 June 2002, the local resident who had first noticed the larvae found a dead female on the ground under the alder trees. It was in two-dimensional form, presumably having been trodden on, but clearly identifiable as *Cimbex connatus*.

It is possible that this sawfly has lingered on in Britain unnoticed for almost 50 years. However, it is up to 28 mm long with a broad robust body; the thorax and the first two abdominal segments are violet black in contrast with the pale yellow of the other abdominal segments. It is the sort of insect that is likely to attract attention, even amongst those who have no interest in sawflies. The larvae are also large and likely to be found by entomologists beating for larvae. It is possible that the trees used for landscaping the car park in the early 1990s were imported and that the sawfly may have been introduced with them, perhaps as overwintering prepupal larvae in their cocoons in the soil. The specimen in Wiltshire in 1997 was found in a semi-natural situation, but that description cannot be applied to a supermarket car park.

I am grateful to Jackie Donovan for spotting the larvae on the car park alders near her home, and for her continued interest that enabled the insect to be positively identified.– A. J. HALSTEAD, RHS Garden, Wisley, Woking, Surrey GU23 6QB.

Alphitophagus bifasciatus Say and other beetles captured using a "suction sampler" on tree trunks and logs

Suction samplers are becoming increasingly frequent tools for the entomologist. A small two-stroke garden "blower-vac" is used to suck up insects into a muslin bag secured over the inlet spout. They have proved especially useful in finding insects in close-cropped grassland where the sward is not long enough to use a sweep net. Having recently bought a McColough BVM 240 blowervac (£99 from B&Q), I set about testing it and was delighted with the results. As part of my experimentation with the new device, I have tried using it to hoover-up insects on tree trunks and logs, especially web-filled dusty cavities and the half-hidden sides of logs. Here are a few early results. *Alphitophagus bifasciatus* Say (Tenebrionidae), two specimens from large fallen beech log, Sydenham Hill Wood (TQ345725, VC17, Surrey), 16.vi.2002. Although reputedly widespread in mouldy flour, this often synanthropic beetle is very local. The mouldy insides of large broad-leaved trees are probably the "natural" habitat for this species. This is the first time I have ever found this beetle. The ancient trunk rested on a steep slope so extra care was necessary as I walked precariously down it carrying the machine ahead of me.

Mycetophagus piceus (Fabricius) (Mycetophagidae), one specimen from an apparently sound oak tree, Cox's Walk (TQ345731, VC17, Surrey), 10.vi.2002. Although showing no major signs of decay, the bark in some areas was riddled with

the characteristic D-shaped exit holes of *Agrilus pannonicus* (Piller & Mitterpacher). The beetle must have been sheltering on the rough bark.

Saprosites species (Scarabaeidae), a dead specimen from the same oak tree in Cox's Walk, 10.vi.2002. Although previously identified as *Saprosites mendax* Blackburn, it is likely that London specimens of this genus are attributable to another species (R. Angus, pers. comm.). This species appears to be spreading and is frequent, flying, in my garden in East Dulwich two kilometres away.

Aderus oculatus (Paykul) (Aderidae), many specimens from the side/underside of a large dusty cobweb-encrusted log, probably oak, Downham Woodland Walk, (TQ3972, VC16, West Kent), 19.vi.2002, 2.vii.2002.

Silvanus unidentatus (Fab.) (Silvanidae), one specimen from the leaf litter beneath a small log, probably oak, Dulwich Wood (TQ342724, VC17, Surrey), 21.v.2002. Turning the log revealed very few insects on its underside, but this specimen was sucked up from the leaf litter beneath.– RICHARD A. JONES, 135 Friern Road, East Dulwich, London SE22 0AZ (E-mail: bugmanjones@hotmail.com).

Agrodiaetus nephohiptamenos Brown & Coutsis (Lep.: Lycaenidae) in North Greece

On 8 August 200, at 11.30 hours, male *Agrodiaetus nephohiptamenos* Brown & Coutsis, 1978 (*Ent. Gaz.* **29**: 201-213) were observed at 1500 metres above sea level on the main ski-lift road up to Mount Falakron, near Drama, North Greece. They were attracted in some numbers with other lycaenids (such as *Lysandra philippi* Brown & Coutsis) to areas of wet mud beside the road. The butterflies were pumping up moisture through their uncoiled probosces, and this activity was assisted by a rhythmic circling action of their hind-wings.

At about 1600 metres up a sub-alpine grass gully, a few female *A. nephohiptamenos* were observed nectaring at white *Scabious* flowers. However, a concentration of male and female *A. nephohiptamenos* was found at between 1800-1900 metres on the top of a rounded peak of the mountain well above the tree-line and ski-centre plateau. Males appeared to be less common that females here. In this area, the course, fine-bladed grass had been moderately grazed by cattle and there were bare patches of stony soil. It was dry and sunny with a cool breeze and occasional clouds passing over. A flock of yellow-billed choughs was milling around the mountain top, and meadow pipits and wheatears were present. There was a hazy view over the plains to the south. A few male *Erebia melas* Herbst. were flying further down the slope. All in all, it was a good place to be.

The *A. nephohiptamenos* butterflies were highly active in the sunshine, but quickly became torpid when cloud obscured the sun. The males spent most of the time on the wing, flying rapidly with frequent changes of direction. Generally, the female *A. nephohiptamenos* were more sedentary that the males and engaged in a number of activities, which included nectaring at a range of flowers and flying rapidly close to the ground in search of larval food plants. One male approached a female that was resting on a grass stem. The female partially opened its wings. The male rapidly fluttered its wings and then both flew up high in a courtship flight.

They came back to land in the grass and then mated. Another female was observed being pursued by two males and a third was seen rejecting a male by raising its abdomen vertically above its wings. Other pairs were seen mating. One female narrowly avoided being caught on the wing by robber fly (Asilidae).

Two females were observed laying pale green-blue eggs singly on pink-flowered Mountain Sainfoin *Onobrychis montana*. The first oviposition was observed at 14.45 hours, in bright sunshine. After testing the plant in several places with the end of her curving abdomen, the butterfly placed the egg on the upper side of an *O. montana* basal leaf. A second female was observed laying an egg on the stem of an *O. montana* plant in a bract below a single seed pod (generally there is a cluster of terminal seedpods in *O. montana*). Closer inspection of the plant, once the butterfly had left, revealed that there was already an *A. nephohiptamenos* egg near the seedpod. Other females were seen testing potential food plants with the tips of their abdomens, but they did not lay eggs.

At 16.00 hours, it became cloudier and the butterflies became inclined to rest on plants and open their wings to catch the sunshine. At 17.00 hours, it began to thunder and spots of rain to fall. The butterflies became inactive and disappeared from view, but a fourth *A. nephohiptamenos* egg was found on the calyx of a lower flower of an *O. montana* inflorescence. The four eggs were collected, but none of them hatched. – ANDREW WAKEHAM-DAWSON, Mill Laine Farm, Offham, Lewes, East Sussex BN7 3QB and TED BENTON, 13 Priory Close, Colchester, Essex CO1 2PY.

Kissiter minimus (Aubé) (Col.: Histeridae) from a tree cavity in East Suffolk

In the course of collecting on the edge of Martin's Glen at Great Martin's Hill Wood, Bentley (O. S. grid reference TM 1036) on 5 June 2001, I came across an old, living Rowan *Sorbus aucuparia* with most of the interior at the base of one side of the trunk occupied by a large cavity. Sieving the approximately 12 centimetre depth of damp, rotten wood and loamy soil inside this produced single examples of *Mycetaea hirta* (Marsham), *Olophrum piceum* (Gyllenhal), *Othius myrmecophilus* Kiesenwetter and a small histerid, which from the habitat, I assumed to be the locally common *Abraeus globosus* (Hoffman). As the rare, other British member of the genus, *granulum* Erichson, is not known from the county, I retained the beetle.

Upon examining it under the microscope, I was surprised to find that it was *Kissiter minimus*, a beetle I would normally expect to find under stones and detritus in sandy places and at the roots of grass and Sheep's sorrel *Rumex acetosella*. *Mycetea* turns up commonly in damp, fungoidal tree cavities and I would expect the two staphylinids to occur in damp leaf litter, moss etc. in woodland such as this, so the discovery of these in this microhabitat is no surprise. The presence of the histerid is more enigmatic as the cavity did not extend externally to ground level so it must have deliberately crawled or flown in. I have never found the beetle under bark, but Vienna (1980, *Fauna d'Italia*: **XVI**, Histeridae, p. 208) cites the beetle as occurring in this situation as well as in humus, either or both of which may have attracted the beetle in this case. It would be interesting to know if other British coleopterists have taken *Kissiter* under bark, in association with tree cavities or in other atypical situations– DAVID R. NASH, 3 Church Lane, Brantham, Suffolk CO11 1PU.

COLIAS ELECTO ELECTO L. AB. *CAPENSIS* AB. NOV. (LEP.: PIERIDAE): A NEW ABERRATION OF THE AFRICAN CLOUDED YELLOW FROM THE CAPE, SOUTH AFRICA

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Abstract

A new aberration *Capensis* of *Colias electo electo* L. (Lep.: Pieridae) is described and illustrated.

Introduction

Colias electo L. is one of the commonest and most widespread of African butterflies. It can usually be found throughout the year in most of its range and apparently lacks a diapause at any stage. Seven subspecies have been described: the nominate *electo* (Linnaeus 1763) from South Africa, Namibia, Botswana and Zimbabwe; *hecate* (Strecker 1900) from North Angola, West Africa and Congo; *pseudohecate* (Berger 1940) from East Africa, Sudan, Ruanda-Urundi, south and east Abyssinia and Somalia; *meneliki* (Berger 1940) from north and central Abyssinia and Erythrea; *mukana* (Berger 1981) from Zaire (and Malawi ?); *manengoubensis* (Darge 1968) from Cameroun; and *philbyi* (Berger 1953) from Saudi Arabia.

In the Western Cape Province of South Africa, which has winter rainfall with cool weather, the typical winter form of the adult is smaller (38 mm) than the summer form (45mm) and has a darker underside. Also, the wing bases are often darkened on their upper sides. In the Western Cape, the spring and early summer rainfall, together with artificial irrigation, provoke rapid growth of larval foodplants, cultivated lucerne and clovers, and there is a resultant massive population increase of *C. electo*. Elsewhere, in the Orange Free State, Natal and Transvaal, it is the summer rainfall which triggers this increase in population. Under these ideal conditions, the adults are larger and more brilliant, and lack the darker scales on their undersides. At certain times, millions of adults can be seen swarming in lucerne fields, particularly in areas of sheep and ostrich farming where lucerne and clovers are grown for fodder. When drought conditions occur in summer, the size of the adult butterfly is variable and depends upon the amount of food eaten as a final instar larva. Miniature adult specimens can often be found measuring only 32 mm.

C. electo exhibits pronounced sexual dimorphism. In ssp. *electo*, the ground colour is orange (yellow + red = orange), but in ssp. *hecate* and ssp. *mukana* the ground colour of the "coloured" female can be predominantly lemon yellow (i.e., lacking red pigment). The areas of lemon-yellow ground colour in the females of ssp. *hecate* can be variable in size, particularly in northern Angola, but in females of ssp. *mukana* these yellow areas are restricted to the hind wings. Both fore and hind wings have broad black marginal borders, which are unbroken in the male, but in the female they contain spots of lemon yellow.

Both sexes have a dark discocellular spot near the centre of the forewings. In the male this DFW discocellular spot is highly iridescent. If a light source is adjusted to the necessary angle, the black scales of the DFW discocellular spot change colour to a metallic navy blue. These iridescent "blue" scales are generally absent from the dark border, but occasionally one or two occur along the inner edge of the black border. Blue scales are never present on the ventral surface. Females appear either to completely lack these metallic blue scales or to have just one or two.

Males have a sex brand on the upperside hind wing, near the costa and near to the base in s7. This sex brand is covered with long and short oval, scent-bearing scales, which differ greatly from normal wing scales.

As with many members of the genus *Colias*, the female of *C. electo* is dimorphic, occurring in the typical orange form and in a white form. The latter, (f. *aurivilliusi* Keferstein) occurs in varying percentages throughout the year and is genetically controlled, behaving as a dominant to the common orange form in a balanced polymorphism.

Variation in the female mainly concerns the lemon-yellow spotting of the dark border, which may be reduced or absent, variation in size and colour of the VHW discocellular spot (this has a larger and an adjacent smaller pupil) and reduction in grey scales of both fore and hind wing. The ground colour can also vary from the normal orange through a range of intermediates to yellowish white. A large number of female forms have been described, as follows:

C. electo electo Linnaeus	f. *aurivilliusi* Keferstein 1882
	f. *overlaeti* Berger 1940
	f. *kostlani* Strand 1911
	f. *flavescens* Eisner 1963
C. electo hecate Strecker	f. *bunda* Berger 1940
	f. *elizabethae* Berger 1940
	f. *katangae* Berger 1940
C. electo pseudohecate Berger	f. *licina* Berger 1940
	f. *lecerfi* Berger 1940
	f. *splendens* Berger 1940
	f. *millari* Stoneham 1957
	f. *africana* Stoneham 1957
	f. *ambreana* Stoneham 1957
	f. *dormonti* Dufrane 1947
	f. *fontenai* Berger 1980
C. electo meneliki Berger	f. *bafanae* Berger 1940

Although slight variation of the ground colour does occur in males of *C. electo*, pronounced variation in the male is extremely rare. Named forms of the male are usually extreme melanics such as f. *eremna* Vari (1976) or the very beautiful violet

and fuscous brown f. *elysium* Kroon (1985) taken in the Orange Free State, South Africa. Another rather worn example of this very rare melanic can be seen in the British Museum Collection, cabinet 42, drawer 142. The specimen is also from South Africa and was collected by A. Duncan at Groote Schuur, Rondebosch, Cape Town, in August 1901. A buff-coloured male, f. *pauper* Berger, is described from Saudi Arabia (Berger 1953). An albinistic male was illustrated in Pennington (Dickson & Kroon, 1978) but this insect has hind wings which are partly orange and therefore it is not a typical "white male". White males have been recorded from several species of *Colias* but not yet from *C. electo* (Remington 1954). These white males may be genetically unrelated to the sex-limited white forms of *Colias* females.

Males with the sex-limited colouration have always been of interest to geneticists. Cockayne (1932) suggested that such males could not be produced unless some abnormal occurrence takes place during cell division. He also proposed that the white colour was due to a defective development of the scales. This was, of course, incorrect. Although Cockayne stated that he had never examined any of these white males, he suggested that they probably have very thin scales, rolled up and devoid of pigment. This description does suggest that he had examined some insects exhibiting such deformities (perhaps similar to ab. *capensis*?).

The colour of orange *Colias* involves the largely independent synthesis and deposition of orange-producing pigments (red + yellow) within the coloured scales, which gives rise to the orange or yellow colours by the differential reflection/absorption of the various wavelengths of white light. In contrast, the UV iridescence (not reflectance) is the result of the structuring of a cuticular interference filter, of necessarily small dimensions, on the upper cuticular surface of the dorsal cells. The pinkish-violet or lilac flash which can be seen on the wings of fresh males arises from the fact that the long-wavelength tail of the UV spectral distribution of the flash extends into the violet end of the visible spectrum where our eyes can pick up the tail. *C. electo* males and females have both fore and hind wings strongly iridescent. Mate selection is up to the female, and males lacking a proper UV signal are usually rejected. White females of the genus *Colias* never show UV iridescence even in those species in which non-white females are as brilliantly iridescent as their males.

Discovery

In mid-November 1987, while harvesting barley on a farm near Riviersonderend, Cape Province, L. McLeod noted that a high percentage of the male *C. electo* which were entering the field from the foothills of the Riviersonderend Mountains, were of an unusual pale form. It was estimated that 10% of the population were of this unusual form, greatly lacking the normal orange ground colour. When in flight these unusual males somewhat resembled normal females because of the greenish-yellow colour of the underside hind wings, and this resulted in normal males giving chase. A closer inspection of some of the butterflies feeding on flowers of the thistle *Berkheya rigida* (Thunb.) indicated that the differences were substantial and

relatively constant. Consequently, during a brief lunch break , two of these pale-coloured males and a miniature example of an extremely unusual white form of the female were collected. Further examination of these specimens confirmed that they were indeed extremely unusual and that the population was worthy of further investigation.

Unfortunately the area was not visited in 1988, but in November 1989 L. McLeod again visited the locality, this time armed with a net. As previously, the unusual form was present, although in fewer numbers, and twenty specimens, both male and female, and some being of poor quality, were taken. Both the 1990 and 1991 seasons experienced severe drought and the lack of larval food plants caused a population crash resulting in only a few normal *C. electo* being seen. Throughout the Western Cape cultivated lucerne and clovers were harvested early because of lack of food for sheep.

In 1992, rains were frequent in spring and continued into summer. In mid-November a large population of *C. electo* was to be seen with approximately 1% f. *capensis*. A good series was taken and the consistent characters of the aberration were confirmed. During the period 1992 to 1999, the studies of this interesting aberration continued and several breeding programmes were undertaken without successfully reaching a conclusion concerning its genetics. Wild-caught female ab. *capensis* produced only typical forms and no aberrations appeared in the F1 and F2 generations.

The existence of this aberration was first mentioned in the 2nd Edition of Pennington's Butterflies of Southern Africa (Pringle, Henning & Ball 1994) page 281.

***Colias electo electo* ab. *capensis* ab.nov.**

This is a very complex phenotype, all aspects of which are expressed as a malformation of scales, both in terms of pigment deposition and in proper cuticular structuring. The range of variability suggests that homozygotes and heterozygotes are present in some sort of semi-dominant mutation.

Holotype ♂: Riviersonderend, Cape, South Africa 08.X.93. (L. McLeod). In the British Museum (Natural History) collection.

Paratype ♂♂: a series from the same locality. One specimen in the British Museum (Natural History) collection and the remainder in the collection of L McLeod.

Scales of the DFW of all males lack the normal compliment of orange pigment, some retaining traces and others being completely transparent. In the latter examples, most of the normally orange scales are grossly deformed in shape, being rolled on their long axes. Scattered scales also show this deformation in those individuals with slightly reduced orange pigment.

Ventrally, the principal phenotypic difference is the "grey" submarginal apex and outer border of the FW. This is caused by the depigmentation of the scales of both the upper and lower layers and occurs in 8-15 scale rows back from the fringe. What

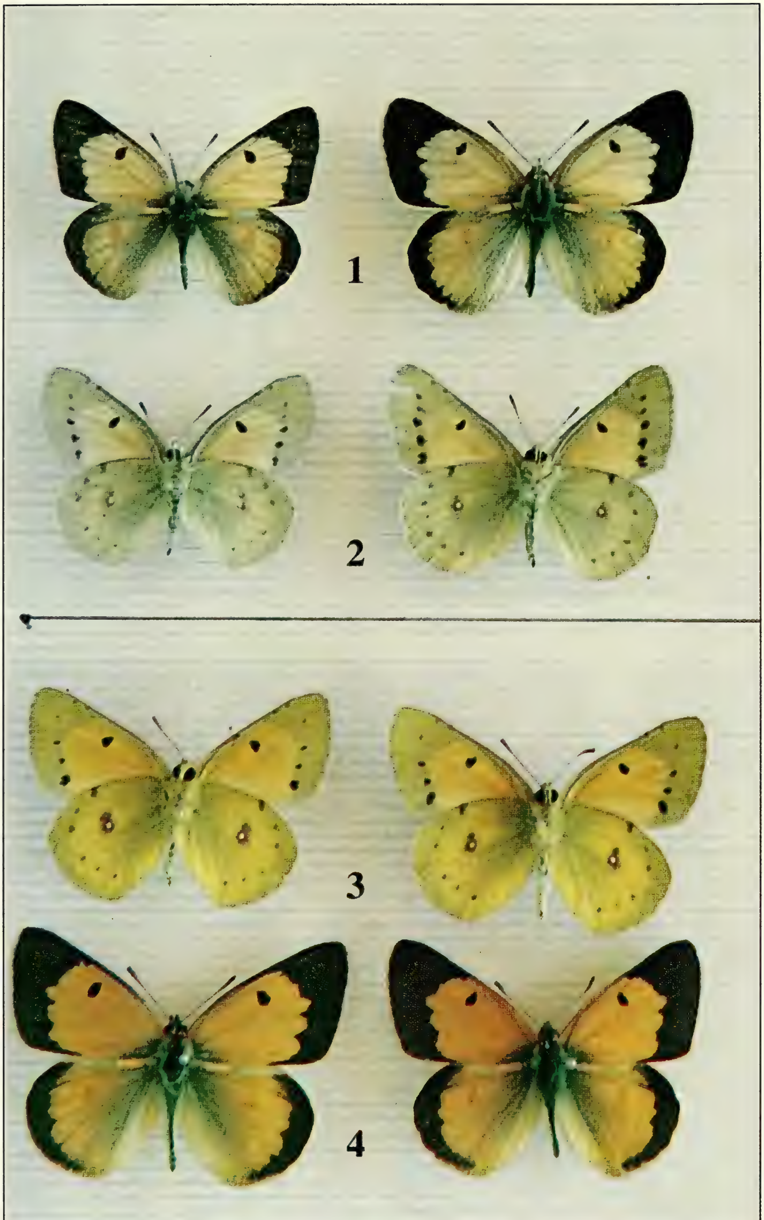

Plate N. ***Colias electo electo*** **L.** 1. ab. capensis ab. nov. upperside ♂; 2. ab. capensis ab. nov. underside ♂; 3. typical form underside ♂; 4. typical form upperside ♂.

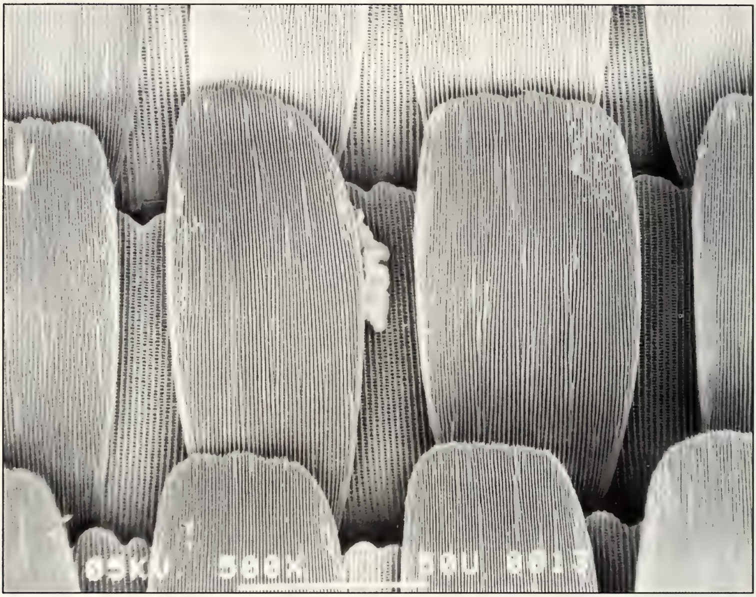

Plate O. ***Colias electo electo*** **— normal male iridescent scales** x 500 (SEM)

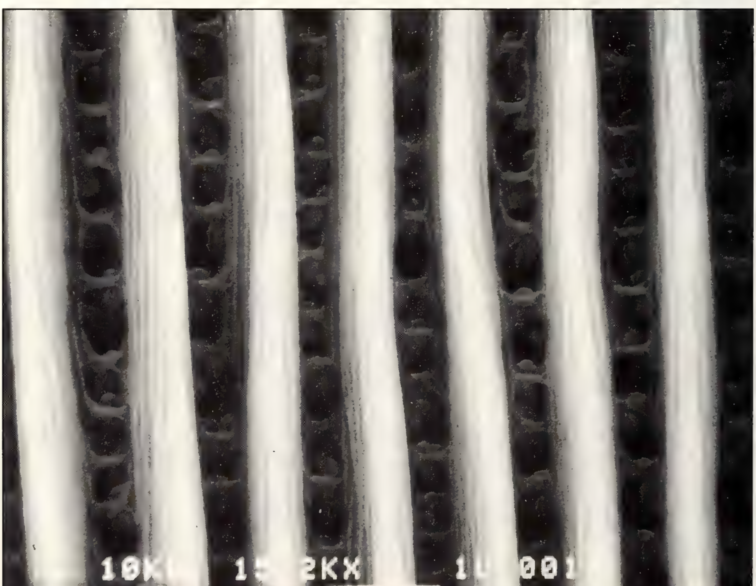

Plate P. ***Colias electo electo*** **— normal male iridescent scales** x 10,000 (SEM) Longitudinal ridges with interference mirrors.

Plate Q. ***Colias electo electo*** **ab.** ***capensis*** **— male iridescent scales** x 100 { SEM) Note the large proportion of deformed UV scales.

Plate R. ***Colias electo electo*** **ab.** ***capensis*** **— male iridescent scales** x 5010 (SEM) Note the malorientation of longitudinal ridges.

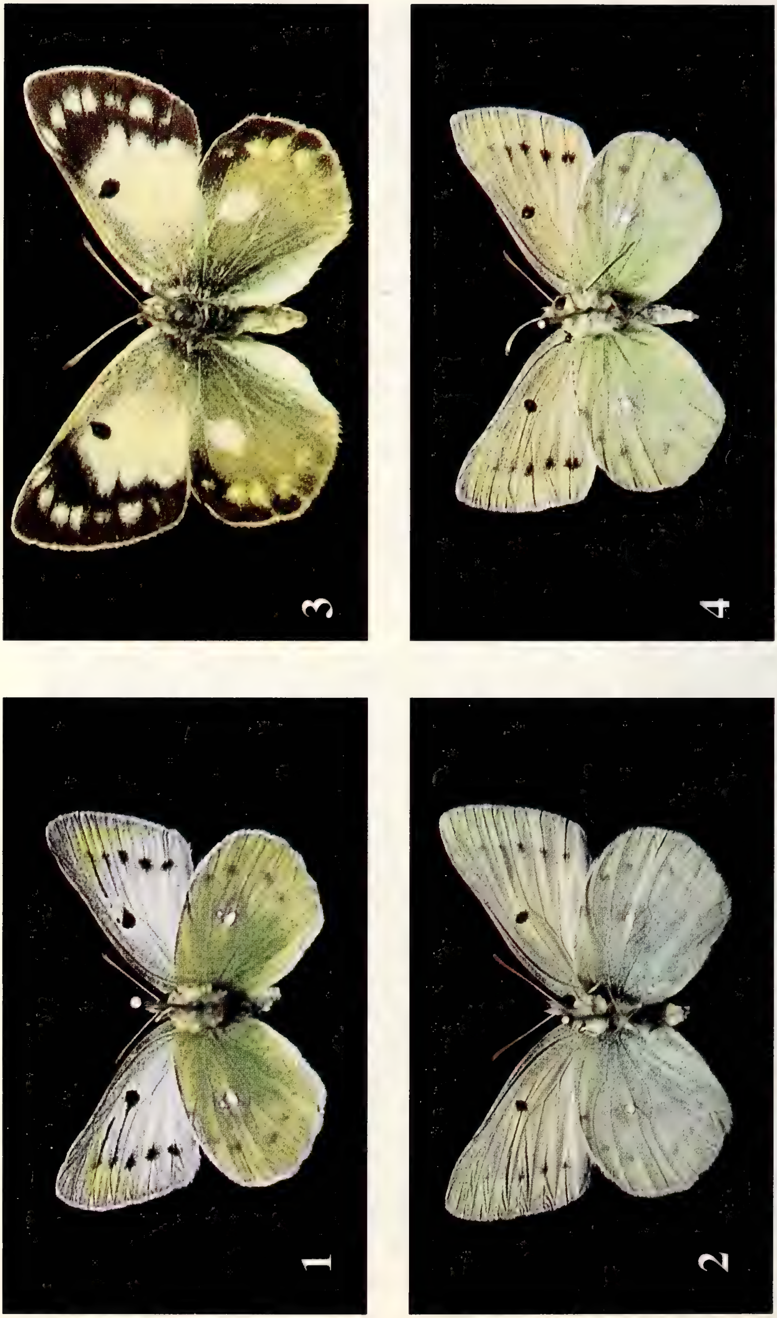

Plate S.

1. *Colias electo electo* **f.** *aurivilliusi* ab. *capensis* ♀ underside
2. *Colias electo electo* ab. *capensis* ♀ underside
3. *Colias electo electo* ab. *capensis* ♀ upperside
4. *Colias electo electo* ab. *capensis* ♀ underside

the eye sees as a grey border is the translucent wing membrane showing through. Some examples of ab. *capensis* lack this grey border and thus its presence and width do not correlate with the other distinguishing characters. The fringe itself is lacking the normal pink colouration, which is so obvious in normal specimens. This pink colouration can best be seen in the chrysalis stage just prior to eclosion. In ab. *capensis* the fringe is grey. The body hairs, the antennae, and the tibio-tarsal portions of the legs, which are pink in normal specimens, are cream in ab. *capensis*.

A further significant character is the colour of the ventral surfaces, which is greener than in males of typical *C. electo*. This may possibly be a result of the reduction in the red pigment, which is present ventrally along with the yellow and melanin (yellow + melanin = green). To the eye, the ventral surface appears to be a paler yellow than typical *C. electo*. The male sex brand of ab. *capensis* is of a bright cream colour.

In males of ab. *capensis*, iridescence appears to be correlated with the level of scale malformation, which affects the interference filters of the cuticle. Thus iridescence may be strong or weak in areas where scale malformation is scattered, and can also be limited in distribution to areas which do not exhibit malformation of scales, such as strips along the posterior margins of the forewings, or the area of the discocellular spot, which can be both brightly pigmented and intensely iridescent. The UV flash in ab. *capensis* appears to be lilac/violet when compared to the pink/red of typical *C. electo*, but because the flash is never strong in the former, this observation may be unreliable. The UV wing patterns as seen by the insects themselves must be extremely variable in ab. capensis and one can only guess at the effect of this on courtship and mating.

Allotype ♀: Riviersonderend, Cape, South Africa 08.X.93 (L. McLeod). In the British Museum (Natural History) collection.

Paratype ♀♀: A series taken from the same locality. In the collection of L. McLeod.

Females of ab. *capensis* exhibit similar scale deformities and reduction of pigmentation as described for males, but the range of variation is more extreme. In the majority of females, pigmentation is greatly reduced and the DFW and DHW are generally of a pale salmon-pink (somewhat dirty looking) and the dark borders are less pronounced. Other examples exhibit only a partial reduction of orange pigmentation accompanied by a yellow suffusion on the DHW. A few show hardly any reduction at all of orange pigmentation. The pink colour of the fringe , tibio-tarsal portions of the legs, and the body hairs, is lacking and the VFW grey borders can be pronounced or not, again not correlated with the scale depigmentation and deformation.

The VHW shows a much more extreme change of ground colour and is generally green. There is nevertheless a degree of variation in the ground colour, some specimens being a most extraordinary vivid turquoise and others a dark yellow. In female ab. *capensis* there is a tendency to be combined with ab. *radiata*, the latter sometimes being very pronounced. The discocellular spot of the female DHW also

exhibits some colour changes in ab. capensis and can range from the bright orange of the typical form, through salmon-pink, pale pink, cream and white. This variation may also accord with the idea of homo- and heterozygotes.

In the white female form of this aberration, f. *aurivilliusi* ab. *capensis*, the ground colour remains white, as in the typical f. *aurivilliusi*, thus the depigmentation does not appear to affect the presence of leucopterin. However, the grey borders of the VFW are present (in the only three specimens taken) and are very prominent at the apex, completely separating the lemon yellow patches from the fringe. In the typical form, the lemon yellow patches reach the bright pink fringe without being separated by a border.

The discocellular spots of the DHW of typical f. *aurivilliusi* are a greyish white, occasionally tinged with pale yellow, and surrounded by a pink suffusion. f. *aurivilliusi* ab. *capensis* also has greyish-white DHW discocellular spots , but the pink suffusion is absent.

The miniature "white" female taken in 1987 lacks any trace of coloured pigment in the non-melanin containing scales of the dorsal and ventral hind wings. Under low magnification, the DFW are furry looking, resulting from extreme rolled deformities of the scales. To the naked eye the ground colour of VHW and VFW is a silvery grey colour with a slight mother-of-pearl reflection (probably from the translucent wing membrane).

Examination under stereoscan and transmission electron microscopy

When examined under stereoscan (SEM)and transmission (TEM) electron microscopy (Plates O to W), the iridescence scales of the dorsal surface are seen to exhibit an almost total collapse of the scale's air space which normally intervenes between the upper and lower surfaces, a space which in normal scales is supported by a series of thin cuticular struts or trabeculae. In ab. *capensis*, what remains of this space is filled with debris, with no trace of the trabeculae or of the large granules of pteridine pigment (pterinosomes) which are present in the air space of normal scales. The "creaminess" or pale-colour of ab, capensis males, and probably the pale females as well, certainly arises from this failure of the pigment to be correctly deposited.

As a result of the collapse of the scale's air space the UV interference mirrors of these iridescence scales are also badly disorientated. This makes the iridescence omni-directional, thus dissipating the reflected energy, and is probably the reason why the UV iridescence of ab. *capensis* is relatively weak and non-directional.

None of the coloured scales anywhere else on ab. *capensis* contain pterinosomes. For example, the ventral scales of males are empty of these pigment bodies. Since these scales are coloured (albeit with a shade different from that of a normal male) and are not collapsed, one must conclude that the mutation is affecting the formation of pterinosomes, but not the synthesis of pigment or the cuticular structures supporting the dorsal surface of the scale. From this information it can be concluded that the principal effect of the mutant is to prevent the formation of the large granules of pteridine pigments and that the collapse of the dorsal UV iridescent scales, which eliminates the air space of these scales, is a secondary result.

Plate T. ***Colias electo electo*** **— normal male iridescent scales** x 5000 (2 scales) (TEM)
Note the dorsal longitudinal ridges, air spaces and pigment granules

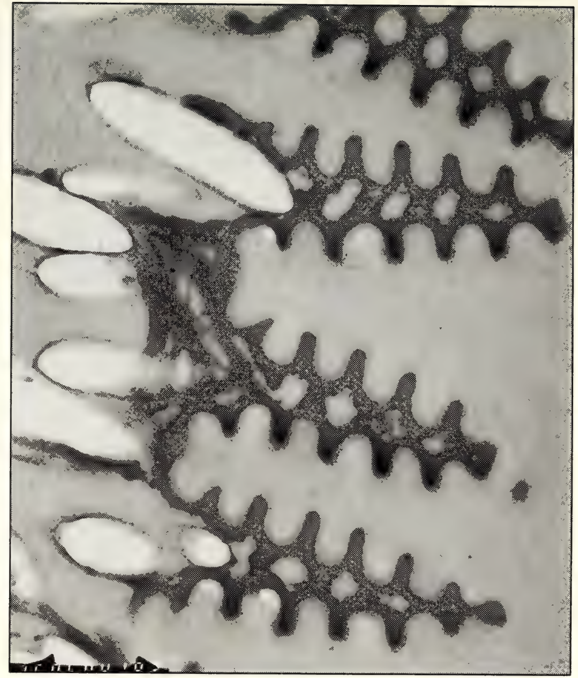

Plate U. ***Colias electo electo*** **— normal male iridescent scales** x 35,000 (TEM)

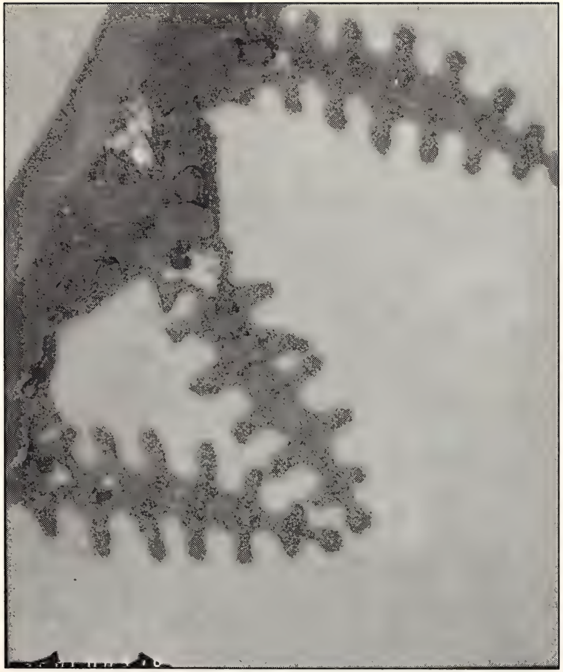

Plate V. ***Colias electo electo*** **ab.** ***capensis*** **— male iridescent scales** x 35,000 (TEM) Note the absence of air spaces, pigment granules and the malorientation of interference mirrors.

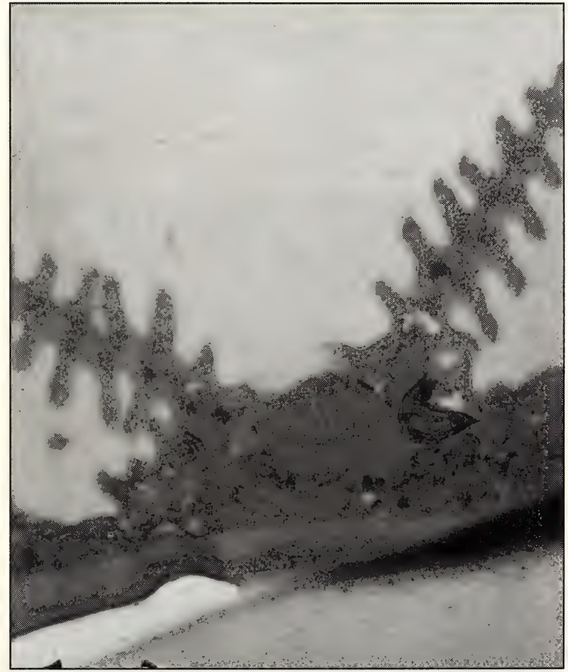

Plate W. ***Colias electo electo*** **ab.** ***capensis*** **— male iridescent scales** x 35,000 (TEM)

Habitat

The habitat in which f. *capensis* occurs is Grassy Fynbos on the lower slopes of foothills of the Riviersonderend Mountains. Also grassland, previously cultivated and fallow farmland with the thistle *Berkheya rigida* (Thunb.) and *Athanasia trifurcata* L. often dominant, with occasional plants of Lucerne, *Medicago sativa*, and Subterranean Clover *Trifolium subterraneum*. Of particular importance are the legumes *Trifolium angustifolium* L. which occurs in large clumps, and the low-growing *Lotus subbiflorus* Lag. The adult butterflies feed at the flowers of *Berkheya rigida* , *Medicago sativa* and *Limonium* spp. (Blue Statice). In winter months when flowers are sparse, *Oxalis purpurea* (Sorrel), *Rapistrum rugosum* (Wild Mustard) and *Raphanus raphanistrum* (Wild Radish) are important sources of nectar.

In the Western Cape *C. electo electo* lays eggs on *Robinia pseudoacacia* (Locust tree), *Medicago sativa* (Lucerne), *Trifolium africanum* (African Clover) and *Viccia sativa* (Vetch) (Claasens & Dickson, 1980).

Predation and parasitism

In the southern and south-western Cape, and possibly elsewhere in South Africa, a major predator of *C. electo* is the Bat-eared Fox *Otocyon megalotis* Desmarest. Adult foxes will concentrate their efforts to lucerne and clover fields when larvae are numerous and of a suitable size, particularly final instar larvae. A single fox can eat 1000-2000 larvae in a night. There is also a high level of predation from birds. The total predation results in a strong density-dependant mortality.

Conclusions and discussion

The very dramatic phenotype *Colias electo* ab. *capensis* results from an abnormal development of the orange scales of the upper wing surfaces and to a much lesser extent, of some of the yellow scales of the lower forewing surface. This abnormal development affects the pigment content of the scales as well as the scale shape, and it is the distorted shape of these scales, extensively so in some individuals, which indicates that the phenotype is an aberration. These malformations may independently involve scales of the orange upper surfaces of both wings, or only those of the forewings, as well as the apical and distal margins (not the fringe) of the VFW. It seems likely that much or all of this has a genetic basis.

From the field evidence, the question arises as to why this aberration has survived and achieved a high level of success (up to 10% of the population in some years). It has already been noted by other authors that the contemporary ecological conditions in the Western Cape are conducive to the evolution of endemics. What we are seeing here may be yet another example of just such an evolutionary progression – the success of a genetic aberration.

Under conditions of very large numbers, it has been noted that males of ab. *capensis* fly low to the ground because of being chased and mobbed by normal males. It would appear that normal males mistake them for females, perhaps because

of their reduced UV iridescence. It is considered unlikely that this change of flying habit is enough to ensure the survival of this aberration. Theoretically, in the wild it is most unlikely that male ab. *capensis* will be accepted by females because their UV iridescence is weak or abnormal. Male ab. *capensis* have never been seen *in copula* by the authors. One must therefore assume that it is the heterozygote female ab. *capensis* which readily accept normal males and thus continue the aberration in the population. In this way only heterozygotes are seen in wild populations.

Acknowledgements

Until his death in 1997 Ellis MacLeod was Assistant Professor in the Department of Entomology at the University of Illinois, at Urbana-Champagne. One of his interests was the genus *Colias* and it was for this reason I contacted him in 1989. During our several years of correspondence concerning ab. *capensis*, we decided to collaborate together on a paper describing the various facets of this intriguing aberration, but unfortunately he did not manage to submit any text before his untimely death. Ellis did however, organise and send some scanning electron micrographs, which had been taken by his colleague Jim Nardi. I would like to acknowledge the encouragement Ellis gave me in trying to unravel this complicated aberration. His collection of *Colias* is now housed at the Illinois Natural History Survey in Champagne, Illinois , 61820-6970, USA. My thanks also to Jim Nardi of the University of Illinois at Urbana-Champagne for his permission to reproduce the scanning electron micrographs and to Phillip Ackery of the British Museum (Natural History) for permission to examine the National collections.

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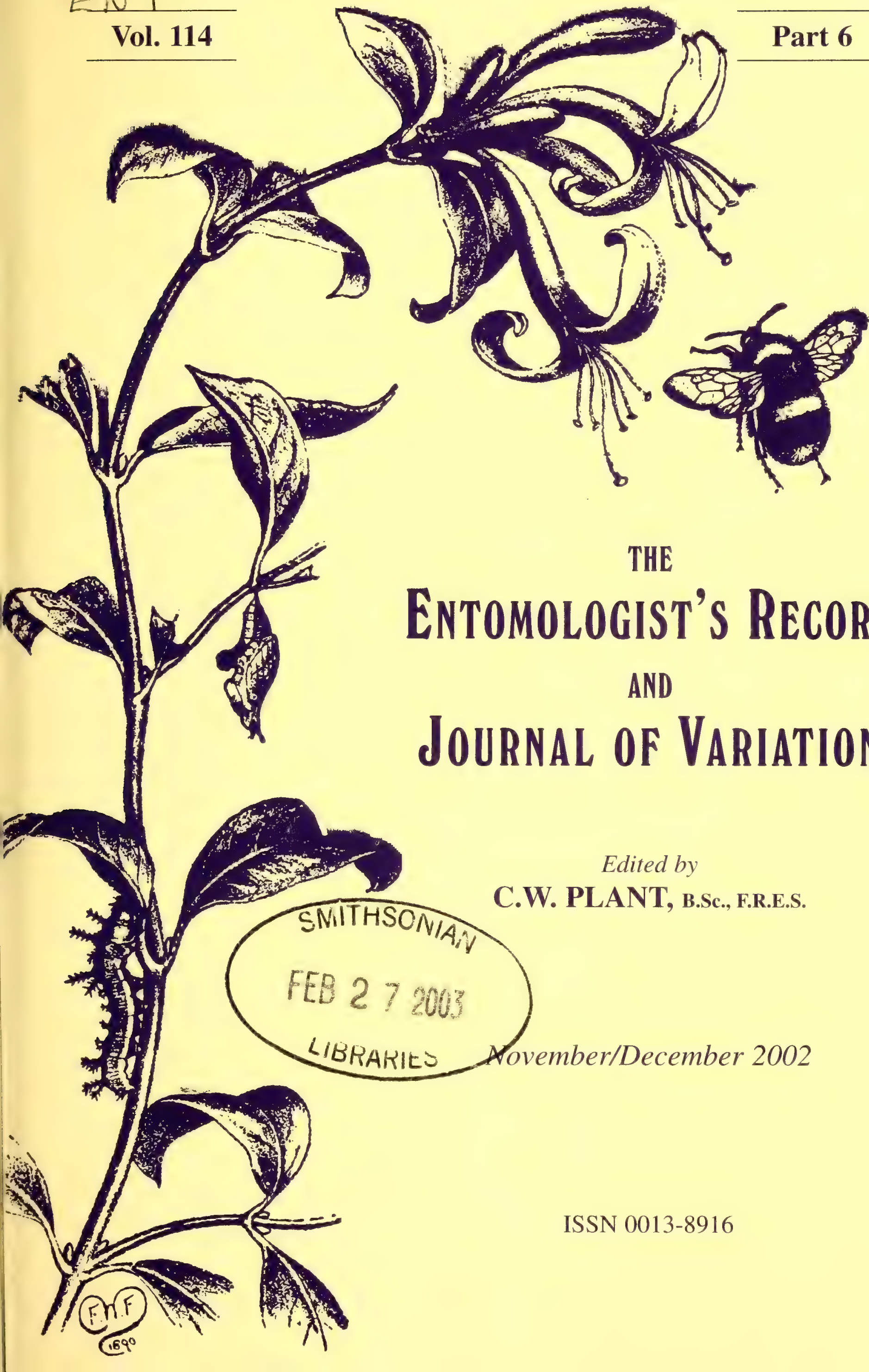

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A MODERN REVIEW OF THE HISTORY OF THE PINE HAWK-MOTH *SPHINX PINASTRI* L. (LEP.: SPHINGIDAE) IN BRITAIN, WITH A EUROPEAN PERSPECTIVE

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Abstract

The 200 year history and fluctuating territorial status of *Sphinx pinastri* L. in Great Britain is reviewed and investigated. The potential sources of British colonies are explored and the reasons for an increasing range towards the north-east since the 1920s is discussed. A brief comparative perspective on the similar continental record is also presented. It is concluded that immigrant specimens from the continent probably sourced many UK colonies, that natural global warming dictated colonisation, that the expansion was exclusively sourced from Dorset, and that this was a race new to the country which overran a previously long-established strain.

Introduction

Even though several rigorous and admirable reviews and collations have been made of the early British records and history of *Sphinx pinastri*, Newman (1965), rightly considered that "A certain amount of mystery surrounds the Pine Hawk". Almost a hundred years ago, J. W. Tutt (1904) individually listed, and controversially discussed in detail, almost all of the known 19th century records made in our islands and on mainland Europe. In 1929, W. Parkinson Curtis added particulars of the nation's intervening sightings (Curtis, 1930a: 1930b), and then in 1947 a critical re-evaluation of the very earliest reports was made by P. B. M. Allan (Allan, 1947). But aside from a large number of subsequent records individually published in various entomological magazines and county lists, and three modern distribution maps published between 1973 and 1980 (Heath, 1973: Gilchrist, 1979: Heath, 1980), there the matter has effectively rested for more than half a century.

A number of visually-similar pine-feeding *Sphinx* are listed and illustrated in *Hawk Moths of the World*, (D'Abrera, 1986). Of those species occurring in Asia and Europe, *S. oberthueri* R. & J. and *S. caligineus* But. inhabit China, and *S. pinastri* L., *S. morio* R. & J., and *S. maurorum* Jor., Europe. Only *S. pinastri* has been recorded in North America, in parts of the Canadian Rocky Mountains and the eastern U.S.A. Several European subspecies of the Pine Hawk moth have also been proposed (Jordan, 1931: Derzhavets, 1979), but their reality is still subject to divergent opinion (Pittaway, 1993; 2000: Danner, Eitschberger, & Surholt, 1998). So far, only *S. pinastri pinastri* has been detected in Great Britain.

Once called "the Fir-tree Arrow-tail-moth" (Lucas, 1895), the now more simply-named Pine Hawk is currently well distributed in south-east England and much less so as far north as Yorkshire – but this was not always the case. During the last half of the 19th century, after approaching a century of recorded national collecting, this species was generally thought "very rare in Britain" (Humphreys, c.1860: Kirby,

1897: Tutt, 1902), or "a scarce casual only" (Meyrick, 1895). There had been just four districts where this insect was known to occur with any regularity, and even the few recognised sites were surrounded by controversy. The moth was evidently established in Suffolk, and probably sometimes in Dorset and near London. Extraordinarily, there were also around half a dozen early records from Scotland – the very earliest stretching back to the late 18th century – but even now, at the beginning of the 21st century, the species has yet to be recorded from Ireland or Wales.

Biology

The adult insect flies mainly from mid June to mid August, more unusually from late April or into September. It is single-brooded in the Britain – there is no coincidence between late records and hot summers. A few of our late sightings have been made near the south coast, but most are found in sympathetic native habitats which have been long-known to boast local colonies of *pinastri*.

It has been implied that in some counties *pinastri* used to fare better "on the lighter, acid soils", as in Hampshire (Goater, 1974) and on the inherent "heath-fir-birch area of Eastern Dorset" (Curtis, 1930a), but in Sussex the species has always been just as numerous – or even more so – amongst artificial pine plantations. Nowadays, nationwide, *pinastri* usually occurs fairly commonly on surviving ancient semi-natural pine-clad heathland and amongst modern alien coniferous plantations, but singletons are also occasionally found at mercury vapour lights situated in more foreign habitats. In addition to the lure of ultra violet light and nectar – it was learnt earlyon that "the perfect insect is sometimes captured hovering over the honeysuckle in the twilight" (Tutt, 1902) and that it visited tobacco-plant flowers – many specimens have been found at rest on pine tree-trunks. Some searchers made such discoveries just "on the leeward side" of the trees, at heights between five and nine feet (Johnson, 1940) or from "two to twelve feet" (Cockayne, 1926), and "without exception ... by viewing the trees from the south-east" from almost ground level to "rather less than five feet" (Mactaggart, 1922), while others found them "in every aspect" "from about 4 to 14 feet from the ground" (Tutt, 1901-5).

Ova are generally deposited "singly on the needles of the pine in June and July", although "sometimes little groups of from two to a dozen are laid together" (Tutt, 1904). The caterpillar stage generally lasts from about late June to mid September. Modern authorities state that larvae only feed diurnally (Pittaway, 2000) but early breeders reported that they "appear to eat (both) by night and day" (Tutt, 1904). The caterpillar's preferred foodplant is the (mature) needles of Scots Pine *Pinus sylvestris*, although Norway Spruce *Picea abies* (Gilchrist, 1979) and Corsican Pine *Pinus nigra* var. *maritima* (M. M. Betts; Hope Entomological Collections) are sometimes utilised. Further evergreen trees were listed as foodplants during the Victorian era – although some may have only been recorded on the continent – including Maritime Pine *P. pinaster*, Weymouth Pine *P. strobus*, Himalayan Pine *P. wallichiana*, Austrian Pine *P. nigra*, several species of Silver Fir *Abies* spp., European Larch *Larix decidua*, Cedar of Lebanon *Cedrus libani*, and Deodar *C. deodara* (Lucas, 1895: Tutt, 1904), and more recently Douglas Fir *Pseudotsuga menziesii* (Pittaway, 2000). 19th century

breeders discovered that "The first and last moults appear to be the most dangerous periods for larvae" because "feeding them on too green and succulent food... produces diarrhoea and the larvae turn almost to water" (Tutt, 1895: 1904), and 20th century enthusiasts also found that "some broods do fail due to viruses" (Porter, 1997). The species overwinters as a pupa in a shallow subterranean excavation under fallen pine needles or in earth from mid September to around early June (Porter, 1997), this occasionally extending over two seasons (Stokoe & Stovin, 1958).

The early records

So dubious was the Victorian collectors' perception of the awkward earliest boreal records that it was "By many doubted as a British species" (Stainton, 1857), some national authorities dismissing them altogether from otherwise extensive lists of British moths (Morris, 1868: Newman, 1869). however, during the final quarter of the 19th century, with the benefit of hindsight and knowledge of a sudden clutch of subsequent records from the east coast of England, later authors thought that these judgements had been made "on account of the unreasonable incredulity which is too often the fashion to regard all records that have not been reconfirmed during the last few years" (Kirby, 1897). Even today the whole issue of old Scottish *pinastri* is evaded in the leading series of reference books on our national macro-Lepidoptera; again, none of these records are even mentioned (Gilchrist, 1979).

Scotland and Northern England

As early as 1800 there was already a "traditionary report" that Scotland was home to the Pine Hawk (Donovan, 1800). In 1811, the accuracy of this folklore was confirmed, when at least two specimens were collected from Ravelston Wood near Edinburgh (sometimes called Rivelstone or Rivelston Wood) (Stephens, 1828: Westwood, 1849; 1854). The last known of an intermittent series from Ravelston was taken in 1818 (Walker, 1907-9). Then in 1827, possibly 1828, an adult was found in Cumberland, "hanging in the position common to the family when recently escaped from the pupa state, to a portion of the root of a fir-tree..... at the side of a fir plantation on Lattrigg, a low mountain near the foot of Skiddaw" (Marshall, 1842: Walker, 1904). In 1860, a collector's attention was drawn to "a full-fed larva..... crawling down the trunk of a Scotch fir tree" at Achnacroish on the eastern side of the Isle of Mull. An adult was successfully bred out in 1861, while another caterpillar seen in the same locality during this same year died within a week of discovery (Edwards, 1886). No further northern records then came to notice until an adult was taken in a domestic garden at Linthorpe (Middlesbrough) in Yorkshire in 1900 (Lofthouse, 1903) and two more were found at rest near Aberdeen in 1928. One of the Scottish specimens had "just emerged; a portion of the pupa-case still remained on the head". The other example, worn, was found in the same locality three days later (Esson, 1928). It seems extraordinary, especially in view of its later history elsewhere in this country, but the Pine Hawk has never been authoritatively detected to the north of Malton in Yorkshire since that date.

Not surprisingly, interpretations of the Scottish records have differed. Some authorities viewed them with a jaundiced eye from the start. Even by 1836 it was being publicly said by a Scotsman on the spot that the Pine Hawk "certainly was never taken in Ravelston Wood, near Edinburgh" (Duncan, 1836). By 1904, Tutt had become excessively cynical over our national records, rather arrogantly stating that errors were suspected to be "incidental to and inseparable from the attempted study of a scientific subject by a large number of poorly equipped students". He added that "A few (accurately identified records) may be due to 'escapes', but there is much indirect evidence furnished ... pointing to grave doubts as to whether the species ever was sedentary (anywhere) in our Islands" (Tutt, 1904). A few years later L. W. Newman and H. A. Leeds baldly summed up its northern history, observing that the species had been "introduced into Scotland as larvae but (it) soon died out" (Newman & Leeds, 1913) – although they provided neither evidence nor argument – a statement that may well have been a mix-up with its history in Suffolk. Then, during the 1960s , E. B. Ford, one of the nation's leading lepidopterists, believed that "it is possibly less rare than supposed and (is still) a native" in Scotland (Ford, 1967). Nonetheless, as has already been mentioned, the few more modern writers have ignored all early records ever made north of an imaginary line drawn from Boston in Lincolnshire to the River Severn (Gilchrist, 1979).

A recent inquiry about the survival of the habitat at Ravelston Wood to K. Bland of the National Museums of Scotland at Edinburgh threw another complicating but speculative light on the early records. Bland confirmed that Ravelston Wood, at map reference NT2274, "is now incorporated into the suburbs of Edinburgh and is largely lost as a wood. Woodland survived close by on Corstorphin Hill, but it is Oak/Beech (*Quercus/Fagus*) dominated, with only occasional Pines. The fragments of the wood that have survived in Ravelston suggest they are remnants of similar Oak/Beech woodland. I have never felt that the habitat was suitable for *pinastri*". He also suggested that the original locality might have been confused "for Ravelrig Wood which is some 10 miles out of town" near Balerno, and which still "has quite a few old pine stands".

The strange, isolated chronicle of the Pine Hawk so far north sits rather uneasily with much (but not all) of its remaining British history – yet it is impossible to dismiss the records as a collection of frauds, introductions, and errors. The only supporting evidence of similar entomological eccentricity concerns the Black-veined White butterfly *Aporia crataegi* L.. Sightings of this species were reported from Hawick, in Roxburghshire, at some time before 1845, a note considered probably erroneous by many experts, and more certainly at Bishops Wood and Stockton Forest in Yorkshire in around the 1870s (Pratt, 1989). Even more interestingly, in an extraordinary and unique episode for this butterfly in Scotland, "In 1974 stock from a few hundred Spanish ova began to be reared outside in Fife ... The next season saw about 200 butterflies successfully emerge and the following year about 100". Protected from avian predation, "This artificially assisted introduction... continued, with reinforcements from Swiss/Italian border stock in 1978", up until at least 1982 (Pratt,

1983). Subsequent contact with the colony's owner to determine its fate proved fruitless. Still, this provides a precedent which proves that under very specific (and in this case protected) circumstances, a particular lepidopteran can temporarily exist within an island of environmental advantage which allows temporary residency far outside of its normal range – but sooner or later they die out, if conditions are too harsh or the time required for adapting to new conditions is too short (Hengeveld, 1990).

Suffolk

Many entomologists believe that the Pine Hawk has been settled in Suffolk "for centuries, although undiscovered" early on (Newman, 1965). But while the area's records only officially commence in 1872 and 1875, with sightings at Harwich and Woodbridge respectively (Lucas, 1895: Tutt, 1902), the county's published history of *pinastri* could yet stretch back another 40 years, as an unspecified "Sussex" sighting made at some time before 1832 (Rennie, 1832) may well have been an error for Suffolk (Pratt, 1999). Whatever, there is no doubt that the moth was well-established on this part of the east coast during the final quarter of the 19th century, as records were published from a number of different collectors almost annually in the entomological magazines of the day. Furthermore, from 1892 to 1895 inclusive the Pine Hawk was locally common, as a single collector could beat out 100 larvae, dig up pupae, and encounter up to 40 adults during one season's work (Bloomfield, 1890: Mellusson, 1895: Tutt, 1904). Numbers quickly fell back again after that sequence and by 1904 some national authorities even considered the moth extinct in the county (Tutt, 1904). Nonetheless, the insect continued to episodically come to notice in Suffolk throughout the 20th century.

This much of the story of *pinastri* in Suffolk is comparatively straightforward. However, in 1880 or 1881 there does seem to have been an attempt to introduce continental specimens to the district, the circumstances of which have been fully discussed previously (Allan, 1947). Availability would not have been a problem to Victorian enthusiasts, as pupae could "be obtained for a penny or twopence each" (Tutt, 1902), the species being "exceedingly common on the Continent" in pine woods (Tutt, 1904). The easy acquisition of foreign *pinastri* in Britain so affected Tutt's views that in 1904 he declared that "a direct and apparently successful attempt had been made to acclimatise the species in Suffolk, and those of us who possess Suffolk caught and Suffolk bred examples no doubt owe our specimens indirectly to these introductions". He then had "grave doubts as to whether the species ever was sedentary in our Islands", and concluded "from the gradual decadence of the progeny resulting from the Suffolk introductions... (that) there is no real natural tendency for the species to become acclimatised and take up a permanent residence here" (Tutt, 1904). Others more simply described the species as "apparently naturalised in Suffolk" (Meyrick, 1895). However, the foreign specimens were released at least nineyears after the very first discovery of the Pine Hawk in the county, and were therefore almost certainly only additions to an area already boasting at least one feral colony. Moreover, it has been shown that less

than one in a hundred attempts at butterfly introduction in the UK are genuinely successful *(Oates & Warren, 1990)* – that is, become viably self-sustaining without further augmentation for more than 25 years – the main reason for this extremely poor success-rate being that introductions are made with species or races that are positioned outside of their current range of environmental advantage.

Essex

Aside from the border sighting made at Harwich in 1872 (Lucas, 1895), this probably being an outlying record from the adjacent clutch of early Suffolk colonies, the inaugural Essex Pine Hawk was taken at an unspecified locality in 1897 (Booth Museum, coll.). No further early encounters took place until 1956 at Lexden (Colchester) and three years later at Bradwell-on-Sea (Firmin et al, 1975). The more regular recording of *pinastri* in Essex commenced in 1983.

London area

The earliest known London area records were made in about 1800 near Colney Hatch Wood and at Esher (Haworth, 1803: Stephens, 1828). No more specimens were apparently seen by Victorian collectors until 1884 and 1885, when an adult and a larva were noted at West Wickham Wood and near Wimbledon respectively (Tutt, 1904). By 1895, its presence near London was considered "a thing of the past" (Lucas, 1895) – but two years later the moth was taken at Weybridge (Tarbat, 1897). The final report within this particular episodic series concerned the discovery of a pupa at Kew Gardens in 1907 (Lucas, 1907), although another batch of records was to be made during the last half of the 20th century. As in northern Britain, the published early historical record is similar to that of a transitory resident.

South-west England

The earliest known Dorset record was made "among tall pines in the middle of Bournemouth" in about 1885 (Mansfield, 1938). Nothing more was then publicly heard of the species until further adults were noted at Poole in 1908 and at Bridport in 1917 (Curtis, 1930a). By 1929, the insect was fairly common over a large area of eastern Dorset (Curtis, 1930b). This colony was situated in the "trough of Poole", where numbers were just as high in 1931 (King, 1931). Regular sightings have been made in the county ever since. At about that time some national experts considered that the species had "certainly been previously overlooked" in Dorset (de Worms, 1934) and, while the early history is extremely thin, at least in part due to an undoubted neglect of the county by pioneering lepidopterists, there is every reason to believe that the moth has been permanently established in the county since 1908 and probably since at least the late 19th century.

The first Somerset sighting came from Hinton St George in 1853 (often referred to as "Crewkerne") – this probably being a front-line part of the Dorset colony – but no more *pinastri* were to be seen in the county for more than a century. The modern era

opened with a record at Minehead in 1957 (Chappel, 1957), and this was followed by other records at Street at some time between 1982 and 1990, at Chard and Wincanton both in 1992 and 1996, at Langport in 1994 (J. C. Lidgate; pers. comm.), and at Timsbury in 1996 (M. Bailey; pers. comm.).

The inaugural Devon report was made at Plympton in 1861. Again, no further Pine Hawks were detected here until about a century later – at Rousden in 1960 and at Torquay in 1966 (McCormick, 2001). In Cornwall the moth has only been seen in an unspecified locality in 1908 (Curtis, 1930a), at Newquay in 1976 (B. N. Boothby; in Smith, 1984), and at Seaton in 1979 (R. Carter) and 1984 – latterly when several were noted (J. Ingram).

The Remaining Novel English Records

Alongside the serial histories just listed, occasional sightings of rogues or pioneers were also recorded. For example, reports came from Hitchin in Hertfordshire in 1844 (Foster, 1937), Deal in Kent in about 1875 (Tutt, 1904), Tunstall in Staffordshire in 1880 (Curtis, 1930b), in Herefordshire in 1881 (Battiscombe, 1881), at Salisbury in Wiltshire in 1895 (Gummer, 1895), at Winchester in 1902 (Goater, 1974) and in another unidentified spot in Hampshire in 1903 (Stevens, 1930), at St Anne's on Sea in Lancashire in 1907 (Curtis, 1930b), in West Sussex "in or about 1917", where one was "taken at rest on a pine trunk near West Burton" (Adkin, 1932), near Polegate in East Sussex in 1919, where a perfect fertile female was found "resting on a telegraph-pole near some pine trees" (Adkin, 1930), "from a tree-trunk" at Haslemere in Surrey in 1925 (Oldaker, 1926), and the species was also seen at Folkstone and Halling in Kent in about 1920, at Ham Street in the same county in 1930 (Chalmers-Hunt, 1960-81), and the sole Worcestershire sighting came in 1995 (P. Holmes).

The history of contiguous territorial change

There were four main geographical districts for *pinastri* available to avid early collectors – transiently early on in Scotland and near London, and later more permanently around Suffolk and in Dorset. Between the two world wars, sourced from the Dorset colonies, the Pine Hawk struck out northwards and eastwards in a great colonising thrust – the first Wiltshire record of the sequence was made at Salisbury in 1944 (Pitman, 1954) and that in Oxford in 1948 (Emmet, 1957). By the 1950s, a large area for the moth had been founded in south-west Norfolk, by 1955 it had penetrated as far north as Boston in Lincolnshire, and by 1976 to Thoresby in the same county (Duddington & Johnson, 1983) – although a temporary halt to its boreal adventure took place during the 1960s and early 1970s. During the late 1970s, the species was said to be "Almost entirely confined to Dorset, Hampshire, Surrey, Norfolk and Suffolk" (Gilchrist, 1979). However, its range was already far more extensive than that – for example, the insect was locally quite commonplace across the two Sussex vice-counties (Pratt, 1999) – as Figures 1 – 6 illustrate.

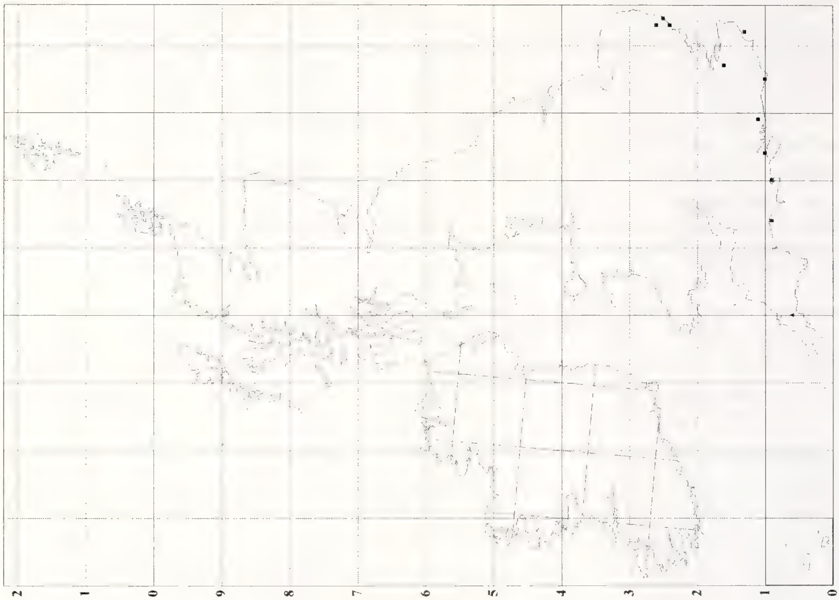

Fig. 2. *S. pinastri* – distribution 1908 to 1924.

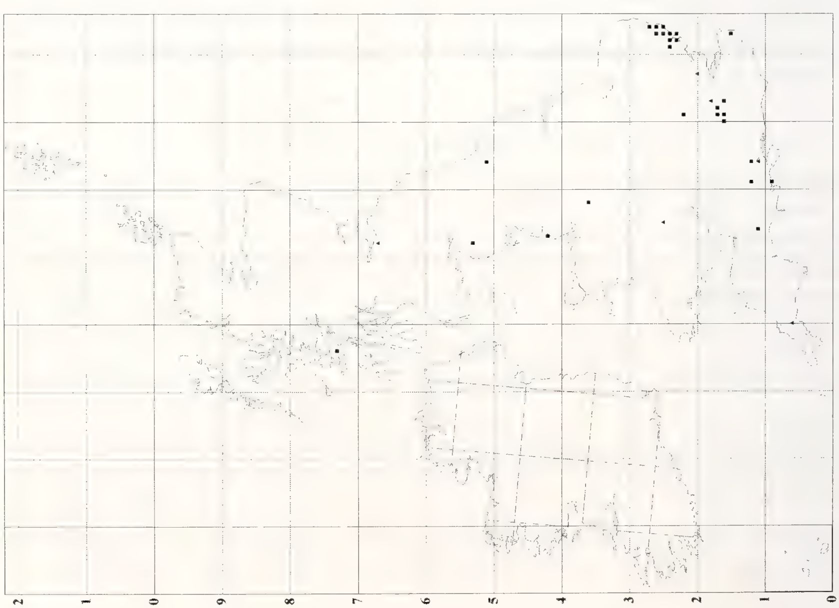

Fig. 1. *S. pinastri* – distribution up to 1907.

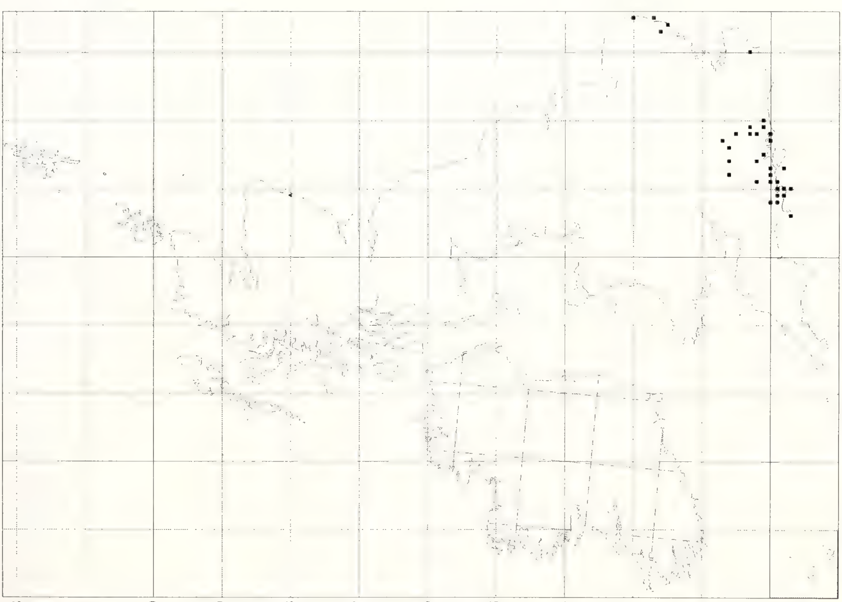

Fig. 3. *S. pinastri* – distribution 1925 to 1947.

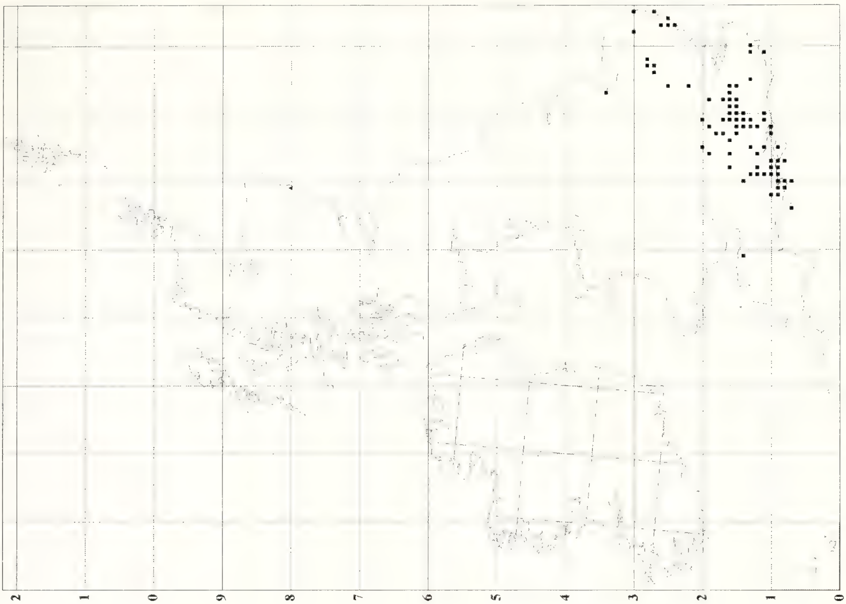

Fig. 4. *S. pinastri* – distribution 1925 to 1959.

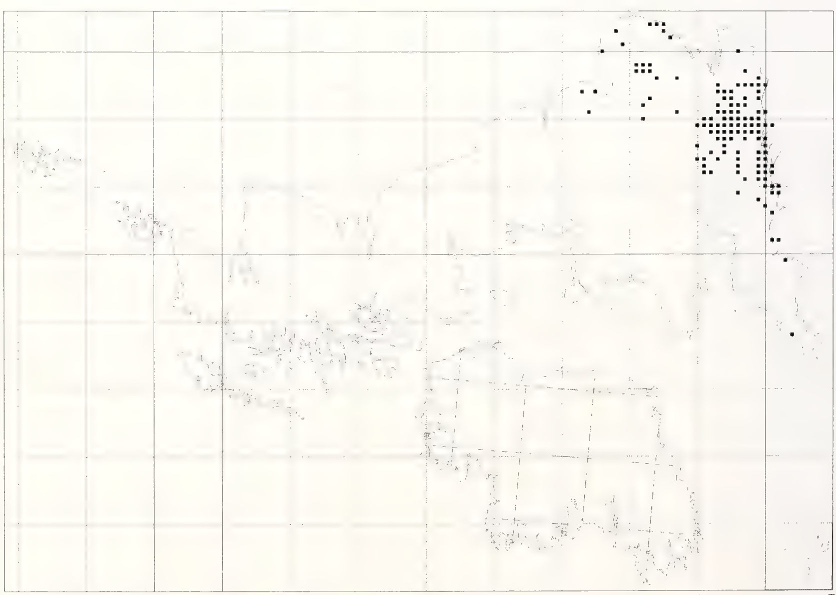

Fig. 5. *S. pinastri* – distribution 1960 to 1979.

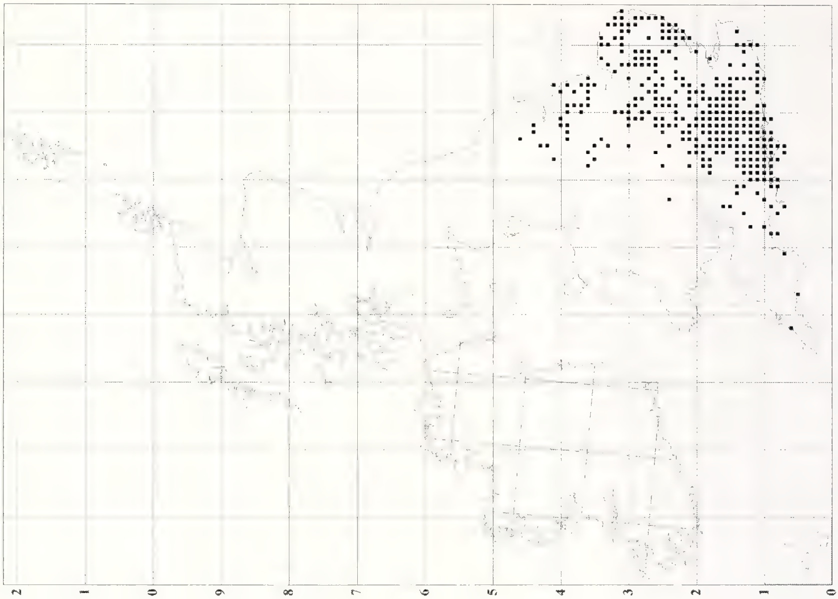

Fig. 6. *S. pinastri* – distribution 1960 to 2000.

The start of the expansion in range has always been dated to the 1930s (Allan, 1947: de Worms, 1962: Newman, 1965: Gilchrist, 1979), but there seems little doubt that it was under way a decade earlier. Bearing in mind that the adult stage's numerical potential is always established from June onwards during the previous season, 1929 was judged probably an "optimum" one for adults in Dorset (Curtis, 1930a) – and 1928 was numerically the most advantageous season for adult British macro-Lepidoptera for a decade (Beirne, 1947b). At a minimum, the insect's territory in that particular district was estimated to be encompassed by an 18-mile walk, which, if a theoretical circle, could mean the colony already covered around 25 square miles. During the same year the moth also suddenly appeared 10 to 15 miles to the north-east of its Dorset headquarters, at Picket Post in Hampshire, a county where collectors regularly took specimens from at least 1935 onwards (Goater, 1974). However, the very first sign of this sequence may well have been signalled by the Haslemere sighting of 1925, which would neatly fit in with the average speed and geographically directional events that took place over the next two decades. It is also known that "Ranges represent local response intensities to environmental variables" and often include "a response lag" before colonisation, even amongst flying organisms (Hengeveld, 1990: Ford, 1982). So it could also be speculated that the previous Hampshire records, in 1902, 1903, and 1917, indicate that there may have been even earlier tentative and episodic false starts to this spread, which ebbed and flowed to and from the north-east. Whatever, the moth finally swept across the whole of south-eastern England during the middle quarters of the century, during the second quarter at an average rate of between four and five miles per annum, which is a typical pace for such events. The northern-most serial native sightings within its continuous range are currently being made in the York district of Yorkshire.

The source of early colonies

Much discussion has publicly and privately taken place over the origin of the early British records. There are five logical alternatives for the source of the pioneering British records and colonies. (1) The moths had simply been misidentified, (2) were accidentally imported with pine seedlings or in a crevice on board a ship, (3) foreign specimens were deliberately released by dealers, (4) both permanent and transient colonies were founded by continental immigrants, or (5) the insect was long-native to each of its three main stations.

Misidentification

It has been said that "No moth could be mistaken for *pinastri*" (Allan, 1947), and many other early chroniclers completely dismissed misidentification as a source of error, as, to the eyes of experts, there were no likely *doppelgangers*. However this may have been to the experienced observer, the Convolvulus Hawk *Agrius convolvuli* has always been a potential contender for confusion amongst less experienced lepidopterists. Some of the earliest hand-painted illustrations depict similar-looking

moths (Harris, 1766: Westwood, 1854) and, even now, with easy access to peerless identification books of comparative photographs, such errors do still initially take place in regions where both moths are rarities (R. Leverton). So it is just possible that details of the odd *convolvuli* sighting did pollute the northern record of the Pine Hawk, although investigation shows that there is no bias towards good seasons for the arrivals of this migrant elsewhere in Britain. It may be thought that sightings made late in the year are especially likely to be of the Convolulus Hawk, as this is the time when by far the largest numbers arrive from the continent. However, in Sussex for example, native *pinastri* have been seen during every week of the year between late April and early September inclusive (Pratt, 1999), and in Hampshire there is even a late September record (Curtis, 1930a). It is also occasionally said that there could be confusion with some forms of the Privet Hawk *Sphinx ligustri* (Pittaway, 2000), which is another immigrant (Gilchrist, 1979: Skinner, 1984: Pratt, 1999; 2001). Still, there can be no doubt over the accurate identification of some of the Scottish records, as a surviving specimen from Dr Leach pinned in the Dale collection section of the Hope Entomological Collections housed in Oxford University Museum testifies – it is labelled "Rivelston Wood, near Edinburgh Mr Wilson 1818" (D. Mann).

Accidental Importation

The idea that the apparently rogue records of this moth were due to "stowaway on some trading ship" was put forward throughout the 20th century (Lofthouse, 1903: Newman, 1965: Sutton & Beaumont, 1989). Amongst almost all butterflies and moths, this is a now discredited explanation for what have been natural migrations from the continent. But, easy though it is to quickly dismiss this suggestion as old-fashioned and at most numerically inconsequential, it is an extraordinary and uncomfortable fact that the original east coast colonies of *pinastri* were clustered between the ports of Harwich and Lowestoft, those in Dorset near to Poole Harbour, the settlements at London were situated just to the south-east of the docks, and that at Edinburgh existed near ships tied up at Leith on the River Forth; even the Yorkshire singleton of 1900 was taken three miles from Tees Mouth docks.

Ships berthing at London have travelled the world for centuries. Napoleonic wars permitting, the wood and canvas sailing ships of the early 19th century and some of the great tea clippers of the 1840s traded with mainland Europe, just as by 1904 Harwich had regular steamship contacts with Denmark and Holland, and Edinburgh/Leith with Holland, southern Norway, and Hamburg in Germany (Bartholomew, 1904) where the Pine Hawk was sometimes "the commonest of the family" (Smith, 1955). But it is far more likely that any accidental introductions of *pinastri* were strictly associated with the importation of small evergreen trees, the chances of a series of completely casual imports being extremely remote. Experts first proposed this idea in 1886 and later authorities agreed that it remained "a possibility" (Jordan, 1931: Beirne, 1947a: Newman, 1965) – and the eccentric Cumberland record

from the 1820s was specifically listed from a "fir plantation". A survey of ancient pollen records carried out on the Isle of Mull in 1999 – where *pinastri* larvae were found during the early 1860s – concluded that there was no good evidence that pine trees had any antiquity on the island, and that any such 19th century woods were indeed artificial (R. Tipping). This confirms that the species could well have been unwittingly introduced here with pine seedlings. On the other hand, such occasional flukes should have also turned up in Wales and Ireland – but they have not.

While small-sized pines had probably been previously grown in this country on a small scale for decades, in the year of 1919 the freshly inaugurated Forestry Commission started the first continuous large-scale propagation of Scots Pine at their school for foresters set up at Parkend in Gloucestershire's Forest of Dean (G. Botwright). The fresh production of quantities of cheap home-grown seedlings would soon have replaced comparatively expensive ship-borne foreign imports. Nowadays there are at least 31 large nurseries producing these trees, scattered throughout the British Isles (N. Day, Forest Enterprise). After more than a century of the insect's sporadic history, amounting to seven geographically-bizarre records made north of an imaginary line drawn between the River Severn and the Wash, only one such *pinastri* sighting has come to notice since 1908 – a pair of freshly emerged adults found near Aberdeen in 1928, a port with ships then only substantively plying trade to London (Bartholomew, 1904: Philip, 1935).

Deliberate Importation

Some authorities suspected that the activities of nefarious insect specimen dealers were at the source of all early British records, adding that "This species appears to have no real *locus standi* in the British fauna" and that all of the 19th century Suffolk records were "the result of an attempt to acclimatise the species" (Tutt, 1904: Jordan, 1931). But merchants would not have had much commercial incentive to purposefully introduce the species to various places as far north as Scotland before the middle of Queen Victoria's reign – while there was a small regular trade for natural history specimens by the early years of the 19th century, the infamous British barter market only really first rose to prominence during the mid 1850s, peaking around the 1890s. Just as today, while no doubt a few *pinastri* were sporadically and casually released by amateur breeders, too many different private collectors of good repute were intimately associated with the moth's early history, some with detailed sequential entomological diary entries, for there to have been an extended and deliberate ongoing fraud by professionals.

Migration

Across the Straits of Dover the European mainland is situated about 26 miles away from England. While not all modern authorities apparently accept the principle (Gilchrist, 1979), almost throughout entomological history, migrations from the continent have been tentatively suggested as a source of British *pinastri* specimens,

these ideas concerning either single vagrants or more determined episodic bids to colonise our islands (Tutt, 1902: Allan, 1947: Newman, c.1949: Chalmers-Hunt, 1960-81: Newman, 1965: Ford, 1967: Pratt, 1999; 2001). European experts on the mainland hold similar suspicions (Eitschberger, Reinhardt, & Steiniger, 1991). B. Beirne, the mid 20th century's national authority on the origin of British butterflies and moths, concluded in a classic paper (Beirne, 1947a), that *pinastri* could be one of those insects "which arrive by overseas migration and establish themselves for shorter or longer periods but eventually die out, to re-establish themselves at later dates", although he was unable to eliminate accidental importation as an alternative explanation in this particular case. There is no good evidence that the Pine Hawk has been permanently established in northern Britain since the early 1860s – but the intermittent series of encounters made between the late 18th century and that time, of both larvae and adults, does suggest temporary residencies similar in nature to those of other species which are now generally accepted to have been founded by continental colonisers during modern times. Such a migratory instinct could also indirectly account for the rogue event at Aberdeen in 1928.

Some good circumstantial evidence of migration from the continent has been provided from the south coast of England, from Sussex (Pratt, 1999) and perhaps "a sandbank facing Poole Harbour in Hampshire" (Turner, 1931). Best of all, on 1 June 1953 a single Pine Hawk was "seen flying N. against the wind" at the Royal Sovereign light vessel moored seven miles out to sea off Bexhill in the English Channel, where the moth was eventually identified after coming to rest on board (French, 1954). The national distribution map of *pinastri* from 1908 to 1924 is also typical for that of an occasional continental immigrant, with sightings just being made in almost every south-facing coastal county.

At least two European mainland Hawk moths have been expanding their ranges during recent times. For example, another pine-feeding species, *Sphinx morio* R. & J., has pushed northwards during the past 20 years, displacing *S. pinastri* in the process (Pittaway, 2000); and *Proserpinus proserpina* Pall. was freshly recorded in about half a dozen countries to the north of its normal range during the 1980's (loc. cit.), including here in Britain – to mv light in East Sussex in 1985 (Pratt, 1985; 1999) and at rest in East London in 1995 (Skinner & Parsons, 1998). There are further similar precedents amongst the butterflies. These include the European Map *Araschnia levana* L., which temporarily colonised Monmouthshire and Herefordshire around the years 1913/4 but was not seen here again until a single immigrant or vagrant appeared in Surrey in 1982, and which expanded its European range during the last half of the 20th century (Emmet & Heath, 1989); and, even more coincidentally, there was the brief unique establishment of the Queen of Spain Fritillary *Argynnis lathonia* L. on the Suffolk coast during the mid 1990's, a species which increased during the same decade in adjacent countries on the continent after earlier serious declines on some other areas (Wilson, 1998: Asher, et al., 2001).

In summary, the arrival of occasional migrations of *S. pinastri* from the continental mainland is a distinct probability.

Native colonies

Some leading authorities believe that the Pine Hawk has been indigenous to some parts of Britain for millennia, although E. A. Cockayne observed that "*Pinastri* can scarcely be regarded as native in the sense that many of our moths are, if it be true that the pines in the midland and southern parts of England were all destroyed" by the Ice Age, and that "the tree was replanted in comparatively modern times" (Cockayne, 1926). It is now known that, during some of the major Ice Ages, glaciers swept across much of the British Isles, although during the last, that of about 15,000 years ago, "most of central and southern Britain remained ice-free" (Stuart, 1988). Even so, it seems unlikely that *pinastri* could have survived such associated cold for long, even in the south. Cockayne (1926) believed that there was "little doubt that it introduced itself naturally", and that this took place after the last great freezing epoch.

Judging from a published geological map (Philip, 1935), all three of the conglomerations of English colonies which are thought to have existed before the 1920s – those near London, Dorset, and Suffolk – were exclusively situated on islands of well-draining "Tertiary Sands & Clays". Scots Pine has flourished on these sands for centuries – some say indigenously, for 10,000 years (Curtis, 1930), others that it is a long-naturalised "presumed introduction" away from northern Scotland (Perring & Walters, 1982: Phillips, 1978) – but the "naturally growing" trees have always been much less frequent away from this type of soil in England. As there were no breeding settlements of *pinastri* on other earths, this implies that all early colonies were first established before the time of the widespread introduction of artificial pine plantations – that is, prior to the 1820s and 1830s. As usual, the Pine Hawk's Scottish settlement is the exception, as Ravelston Wood is positioned on Boulder Clay (and Balerno on Carboniferous Sandstone) surrounded by highly complicated geology. But, supportively, the colony is known to have definitely been in existence here since at least around the 1790s and some believe that Scots Pine has been long-native "in a few places between Yorkshire and Sutherland" (Step, c.1910).

Colour forms

C. G. Barrett (1895) stated that the Pine Hawk was "not very variable" and that "English specimens are frequently plain in appearance" in their grey, grey brown, or "exceptionally brown" ground-colour. By the 1930s, later entomological authorities had noticed that several distinctly different colour types then existed in the British Isles. More importantly, the two main forms – grey and cream – were concentrated into two separate geographical areas. By the late 1970s, variation was being described as "confined to the intensity of the wing pattern", to black markings on a dark grey ground-colour, although "almost unicolorous brown" specimens were also being noted – much as had been chronicled by Barrett. However, no mention of cream-coloured moths was made (Gilchrist, 1979). While most experts have held that many centuries of natural selection

within restricted and isolated environments has resulted in divergent local colour forms, it could also be argued that two different races arrived in England from the continent.

From a number of observations made from 1922 to 1924 amongst both bred and wild-caught adult specimens originating from Saxmundham in Suffolk, two series of opposite colour forms were obtained. These concerned the extreme but locally commonplace "very pale whitish brown" or "cream" ab. *albescens* Cock., and the scarce "very black" ab. *unicolor* Tutt (Cockayne, 1926: illustrated in Turner, 1926; plate 9). In 1931, *unicolor* was still occurring as a great rarity in the wild (Nash, 1931) and nine years later there remained "a tendency amongst the Suffolk specimens... to a lighter and a more chalky ground colouration of the wings and body than those specimens from Dorset" (White, 1940). However, one of the foremost current Suffolk moth recorders, J. Nicholls, states that of around 35 moths examined at Ipswich in 1998, almost all had the usual "grey ground-colour", that there was "only one, or possibly two, of the brown variety", and that no black or cream examples were detected (pers. comm.).

Throughout its history here, similar contentions have been made about Suffolk larvae – the Pine Hawk's caterpillars also enjoyed a long-held reputation for being unusually variable. Larvae were basically dimorphic, exhibiting a green or brown ground-colour, although there were also many intermediate forms (Tutt, 1904). Caterpillars painted from Leipzig stock of 1882 picture a green form with a broad brown dorsal stripe (Buckler, 1887).Compared to German examples, 19th century Suffolk larvae were considered "much less bright in colour, the dorsal region broadly light brown, with darker brown clouds on each segment, and the sides mixed brown and greenish or yellowish" (Barrett, 1895). Other Victorian collectors found our English examples were "of a bright green ground-colour or in some cases of a reddish tinge" (Lucas, 1895). Seventy years later, after extensive experience breeding the species, L. Hugh Newman confirmed that larval colouration differed according to the country of origin, stating that "The fact that larvae of Suffolk stock tend to be more sombre in colouring in the final skin than the progeny of pupae imported from Germany, seems to indicate that they are a somewhat local form which may have been isolated for a long time" (Newman, 1965). An illustration of a West Sussex caterpillar bred at some time during the final quarter of the 20th century depicts a bright well-contrasted "reddish-brown" form, "heavily marked with white and dark brown on the back and sides and dark green also on the sides" (Porter, 1997).

Meanwhile, during the second quarter of the 20th century in the south-west of England the adult population was mainly composed of "slaty-grey" moths (Jeffreys & Birkett, 1941) or "grey-brown forms" (Turner, 1936), there being "a tendency of the average Dorset specimens towards darker and browner markings than those of Suffolk" (White, 1940). Evidently a single melanic was also seen in Dorset (Kettlewell, 1973). In the same county at the same time, "red-brown" examples also occurred as a small percentage of the feral population at Wareham (Jeffreys & Birkett, 1941). But in Sussex, situated 40 miles away to the east, there have never been any

reports of black, whitish, or red-brown *pinastri*. Throughout its permanent establishment here, since 1942, colour variation amongst the typically grey adults has been "Usually slight... although the darker markings do vary in intensity", these specimens being as illustrated in Skinner, 1984; pl. 19, fig. 10 (Pratt, 1999). Judging from the colour of the Edinburgh specimen of 1818, the curious Scottish colony was also composed of grey moths.

In 1904, Tutt pointed out that internationally "There was a very wide range of variation in this species", including ground-colours ranging from whitish, grey, and brown. He confirmed that, while "The more common central European form is of (a) slaty-grey hue", two "magnificent pale" specimens "with greyish-white forewings and deep brown characteristic lineolae", existed in London's Natural History Museum. These were labelled "Berlin", although a footnote frustratingly added "it is quite possible" that these insects "were not captured in the Berlin district" (Tutt, 1904). Still, it seems that a whitish form of the Pine Hawk with brown markings then occurred in Germany. However, by the 1960s a melanic form dominated in some parts of the Netherlands (U. Eitschberger) and in industrial areas of Czechoslovakia (Kettlewell, 1973), and within a decade the black *nigrescens* Lemp. (indistinguishable in colour from ab. *unicolor* Tutt) had "in a comparatively short time (become) dispersed over the whole country" of Holland (Kettlewell, 1973). Nowadays the moth remains "very variable" on the continental mainland, a recent assessment stating that "The normal grey colour may be of almost any shade", "ranging from dark brown (f. *brunnea* Spuler) to cream (f. *albescens* Cockayne)" (Pittaway, 2000).

The first records of melanism within Suffolk Peppered Moth, *Biston betularia* L., were made in 1895 (possibly 1894) (Kettlewell, 1973) and in 1898, both at Ipswich. By the mid 1930s, it was being said that the black form, f. *carbonaria*, "used to be rare... but is rapidly spreading to our rural districts" (Morley, 1937). By the 1950s , perhaps surprisingly, fully three-quarters of the Lowestoft population were black, and during the following decade two-thirds of those at Sudbury (Kettlewell, 1973). Since that era the form has greatly diminished country-wide. The history of melanism within *betularia* apparently proves that the local environment became increasingly darker during the 1930s and 1940s, peaking during the 1950s and 1960s. Just how relevant these high levels of black Peppered moths are, so far as grey or cream forms of the Pine Hawk are concerned, especially as there was no increase in its own black ab. *unicolor*, is speculative.

In the absence of any evidence of a permanent significant alteration in the Suffolk environment towards a grey landscape, and in the presence of a wave of such-coloured colonising *pinastri* from the south, the stark quantitative change in the comparative adult colour forms found in the county between the second and final quarters of the 20th century – from cream, to grey and sometimes brown – suggests that the early predominantly light form was completely overwhelmed by the later invading grey Dorset race. If long-acting natural selection in Suffolk had dictated a light-coloured moth, the darker colonising race should have become unsuccessful in the area, with the colour of survivors becoming attenuated towards the paler form.

While the change to grey forewings was indicative of an environmentally different race, colour was not the driving force behind colonisation.

The causes of territorial increase

Perhaps the most important and remarkable part of this insect's history is that, after more than a century of episodic and severely localised existence on our island, specimens from Dorset suddenly proceeded to colonise more eastern counties. Nevertheless, even after around three-quarters of a century of subsequent expansive effort (with a brief break during the 1960s and early 1970s), the insect has been unable to properly colonise adjacent areas situated in the west of Britain; even along the south coast, permanent settlements still peter out in Dorset.

A lowering of the numerical levels of the Pine Hawk in the wild has been attributed to a number of different factors. There has been notional death from insecticide spraying at Cannock Chase (Allen, 1955) and over-collecting at Bournemouth (Postans, 1948), more definite losses due to infertility, frost (Cockayne, 1926), and the parasites *Phryxe vulgaris* Fall. and *Protichneumon pisorius* L. in Suffolk, Norfolk, and Hampshire (Styles, 1958), and breeders have also encountered attacks by viruses (Porter, 1997) – but no convincing idea has so far been advanced in explanation of the great increase in English range.

The Increase in Pine Plantations

The enlargement in territory that the Pine Hawk enjoyed during the 20th century is often simply and directly attributed to "the increased planting of conifers" (Gilchrist, 1979: Pittaway, 1993; 2000) that took place after the formation of the Forestry Commission in 1919. Ever since that date the Commission has been inserting evergreen trees in large plantations across the country, especially in the north. Naturally, pines have been preferentially introduced to habitats which produce the best quality timber and the fastest grow-rates – that is, in dry and sandy soils – although the Lodgepole Pine comes to the fore in northern Britain due to its superior toleration of the generally more exposed and damp conditions (N. Day, Forest Enterprise). During the 1920s, away from the far north, the English home of foreign pine was in the counties of Hampshire, Berkshire, Surrey, and Gloucestershire, as illustrated in figure 7. Similarly, by the end of the century the tree's headquarters were situated in coastal counties from East Sussex to Dorset, and Norfolk and Suffolk, while inland Worcestershire, Nottinghamshire, and South Yorkshire were just as prominent – but Surrey and Berkshire had become the counties most densely populated with these plantations, as illustrated in figure 8. Similar levels exist in Ireland – 69,000 hectares of pine are currently growing on the island, this amounting to about one percent of the total land area (M. Twomey & G. Cahalane, Forest Service) – yet this is a land where the Pine Hawk has so far gone completely undetected.

Despite currently holding an unprecedented amount of territory, the distribution of modern *pinastri* colonies has been restricted to England where presently almost 130,000 hectares of conifer trees exist. Pines are now the second most numerous national tree after the oak (Forestry Commission, 2001). But it is rarely appreciated

that such plantations have been substantially increasing for more than 170 years and, most importantly of all, that more than 60% of today's area of pine was already in place before the moth's colonisation got well under way. While Scots pine has been here since after the last serious Ice Age, the first of a series of related foreign trees, the Corsican pine, was originally introduced in 1792 – and this is a species which currently accounts for a third of our pine acreage.

It is known that there was at least one fir plantation in Cumberland by the late 1820s (Marshall, 1842). During the 1830s the practice grew apace elsewhere, with the arrival of a number of other evergreen species (Mitchell, 1981: Grimes & Herbert, 1988), and by 1924 79,000 hectares of pine plantations were already being cropped in England (Forestry Commission, 1928) (figure 7). While the proliferation of artificial sympathetic habitats has doubtless been the most significant factor in the insect's modern high density of distribution, all of the detailed evidence and distinctive history assembled here shows that the insertion of 411,000 hectares of alien pine trees on the British mainland made no material contribution to the change in range.

There are only a few records of *pinastri* larvae feeding on spruce, although the tree is sometimes spoken of in the same terms as pine as a foodplant (Gilchrist, 1979). An examination of the distribution maps for spruce, figures 9 and 10, shows no correlation at all with that of the territory held by this moth, so it can be safely stated that this particular tree has certainly played no significant part in the British history of this insect.

Climate

It is known that "species ranges can be considered as optimum-response surfaces with a complex internal structure" and that they are "dynamic entities over the long or short time scales and can be considered as outcomes of a process of perpetual adaptation to changeable conditions": "Climatic conditions may be of prime importance to the probability of establishment and eventual success of invading species", and why most invasions fail (Hengeveld, 1990). In 1930, W. Parkinson Curtis listed this insect as one of those "resident species which find our climate trying, and have a struggle to maintain a footing, but are successful in doing so" (Curtis, 1930a). Just which components of our weather were considered detrimental was not mentioned, although frost has been known to kill larvae. For example, in Suffolk in 1922, probably before the main expansion in range, it was said that "Infertility coupled with the lateness of the larvae and their susceptibility to frost perhaps accounts for the relative scarcity of *pinastri* and its inability to spread in this country"; on a large sample of "hundreds" of eggs obtained from several different Suffolk females, an infertility rate of around 50% was recorded (Cockayne, 1926). However, the early history of the Pine Hawk's colonial presence – albeit perhaps temporary – in comparatively cold Scotland, its long-term absence from the warm extreme south-west of England, and its European distribution (discussed later), disputes the idea that frost is a serious depressant force on numbers and overall range; the fact or effects of any abnormally-high levels of infertility within the general feral population of *pinastri* since the 1920s have yet to be reported.

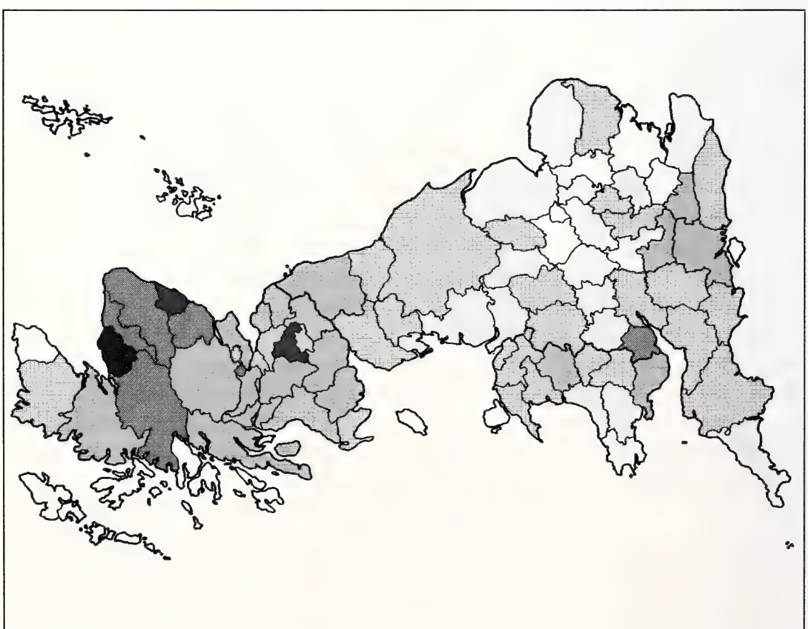

Fig. 7. The Density and Distribution of Pine Plantations in the Counties of England, Wales and Scotland, in 1924

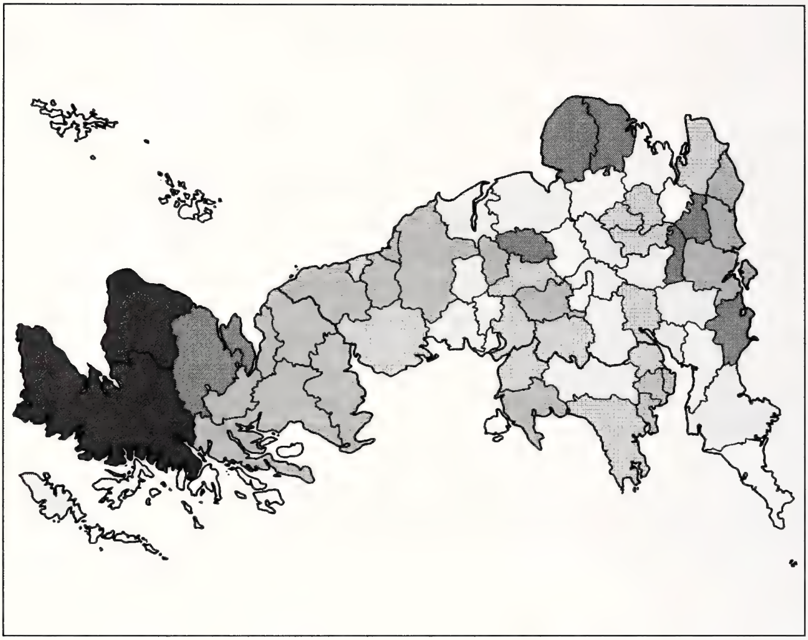

Fig. 8. The Density and Distribution of Pine Plantations in the Counties of England, Wales and Scotland, from 1994 to 1999

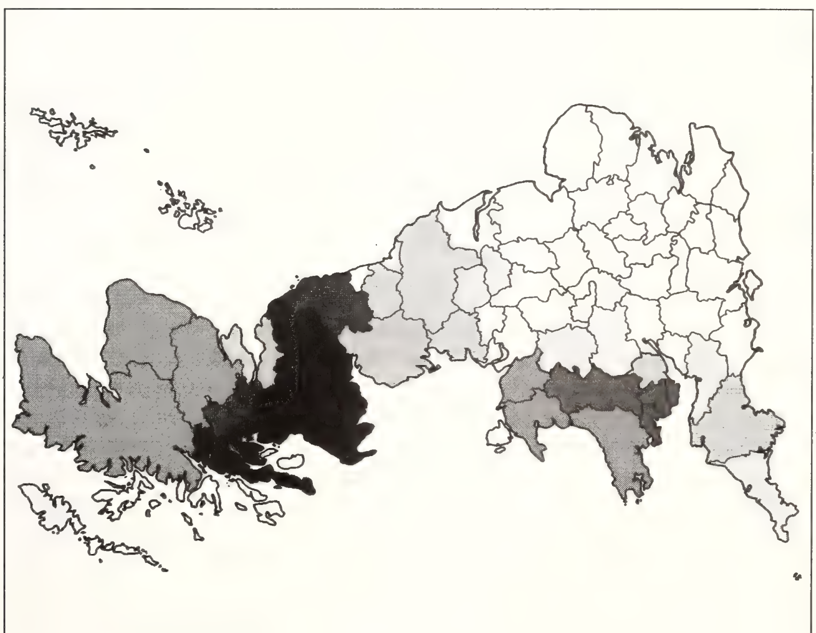

Fig. 9. The Density and Distribution of Sitka Spruce Plantations in the Counties of England, Wales and Scotland, from 1994 to 1999

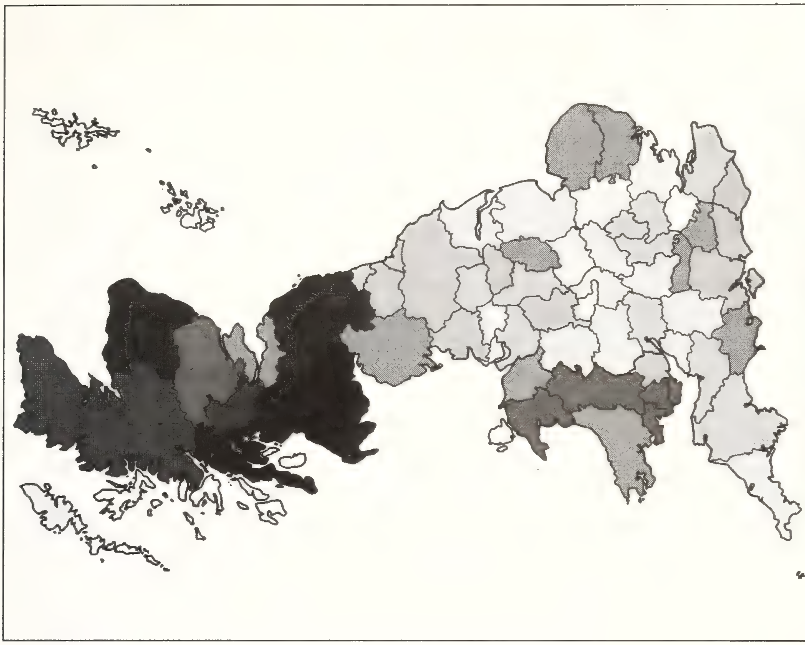

Fig. 10. The Density and Distribution of Pine and Sitka Spruce Plantations in the Counties of England, Wales and Scotland, from 1994 to 1999

The moth's national distribution is surprising similar to that of the Stag Beetle *Lucanus cervus* L., as recently illustrated (Napier, 1999: P. T. E. S., 1999). It is now known that large parts of this beetle's local range are intimately determined by long-term rainfall, high levels being geographically deleterious (Pratt, 2000). In addition, it was observed many years ago that "a succession of seasons of gradually increasing rainfall is detrimental to Lepidoptera" (Beirne, 1947b). Not surprisingly, the Moth Recorder for Devon, R. McCormick, considers it "very odd" that *pinastri* can be found at Wareham in adjacent Dorset but not in his home county. McCormick confirms that there is currently "no lack of foodplant", and shrewdly suggests that Devon "must be too wet" (pers. comm.). On the other hand, where the Pine Hawk's colonies finally peter out in Dorset the soil where successful pupation takes place "is most usually sandy peat, which is frequently very wet", and occasionally "submerged some inches up the trunk with flood water" (White, 1940). Still, breeders have noticed that Pine Hawk pupae "dry out easily" (Friedrich, 1986).

The geographical distribution of annual British rainfall exceeding 100 centimetres (Fig. 11), has remained reasonably constant during the 20th century (Philip, 1935; 1996: Meteorological Office, 1999). Perhaps surprisingly, the wet autumn and winter of 2000/2001 notwithstanding, there is no evidence that varying long-term rainfall (Nicholas & Glasspoole, 1932: Central Statistical Office, 1933 et seq.) – either during a full length of the insect's life-cycle, during July when ova are at their peak, during August and September when larvae are feeding, from October to May when pupae are underground, nor from June to July when adults are in flight – has any coincidence in timing with a territorially fluctuating *pinastri*. But, while there is no sign of an alteration in the quantity of rainfall being the driving force behind the insect's changing range, it is still true to say that a comparison of the geographical distribution of high precipitation in Britain and the insect's modern distribution prove that this *Sphinx* has so far been unable to colonise wet districts. Throughout both the UK and the continent, *S. pinastri* shuns the more humid westerly coasts; and, on the mainland, none of the pine-feeding Hawk moth species were recorded in western littoral districts during the 20th century, including those facing the Mediterranean and Adriatic Seas.

"The relative humidity of the atmosphere and the effectiveness of most precipitation are directly affected by prevailing temperatures". Moreover, "Temperature is probably the most significant climatic factor in biological terms as all metabolic processes (indeed most chemical reactions) are temperature-dependant" and"the annual cycle of temperature is perhaps of greatest significance in considering the biological impact of climate and climatic change" (Ford, 1982). Many associations have recently been made between high temperatures and the local territorial increase within individual butterflies and moths, and in the changing status of the Stag Beetle. It was concluded that "the disproportionate responses within these coincidences show that it is a change from an established norm of sometimes only a few years duration that causes modifications in range, and not necessarily absolute temperature values" (Pratt, 1999; 2000; in prep.). The Pine Hawk's pattern of

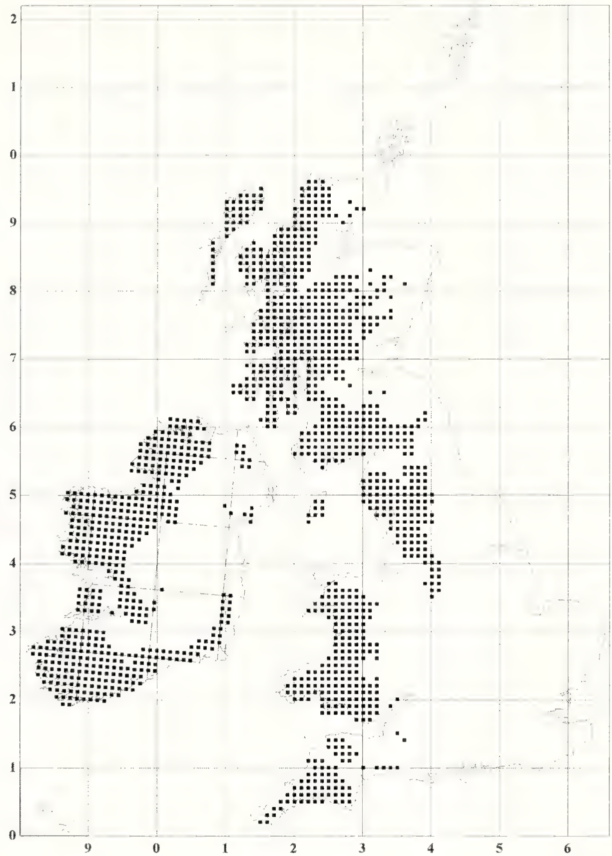

Fig. 11. Average annual British rainfall exceeding 100cms c.1961 to 1900.

colonisation also has some strong correlations with that of increased temperature. By the Second World War, meteorological researchers had gathered "very decided evidence of climatic amelioration round the North Atlantic since 1925" (Manley, 1944), although it was 1933 before really unfamiliar levels were attained in central areas of England (Manley, 1974). This eight year-long discrepancy may have been locally made up in our south-coast counties, as some districts – such as Dorset – are known to have been warmer at about that time (Philip, 1935) and since (Chandler & Gregory, 1976: Philip, 1996). "As climatic changes bring about a re-alignment of the location of the limiting isotherms (or isopleths – lines of equal rainfall – as the case may be) the distributional limits of organisms are correspondingly adjusted" (Ford, 1982). In 1956 Baron C. de Worms pointed out that "During the past twenty five years there appears to have been a distinct northward movement of a number of species of

Lepidoptera, chiefly moths whose normal habitat is in the more southerly regions of Europe". He added that there was "a definite movement to extend their range towards the north by some insects whose range just reaches the English Channel or the North Sea and by others of a more southern distribution". This afforded "ample evidence in support of the theory that this apparent movement towards the north of Lepidoptera and other creatures is most probably associated with the warming up of the climate in these more northerly latitudes of Europe, especially as some of the species of Lepidoptera are of distinctly Mediterranean origin and habitat" (de Worms, 1956; 1963). Now, more than forty years later, not only can it be confirmed that these phenomena have continued episodically and even accelerated to new heights (Central Statistical Office, 1933 et seq.: Manley, 1974: Jones, Wigley, & Wright, 1986), as illustrated in figure 12, but that the climatic change has also been named – natural "global warming".

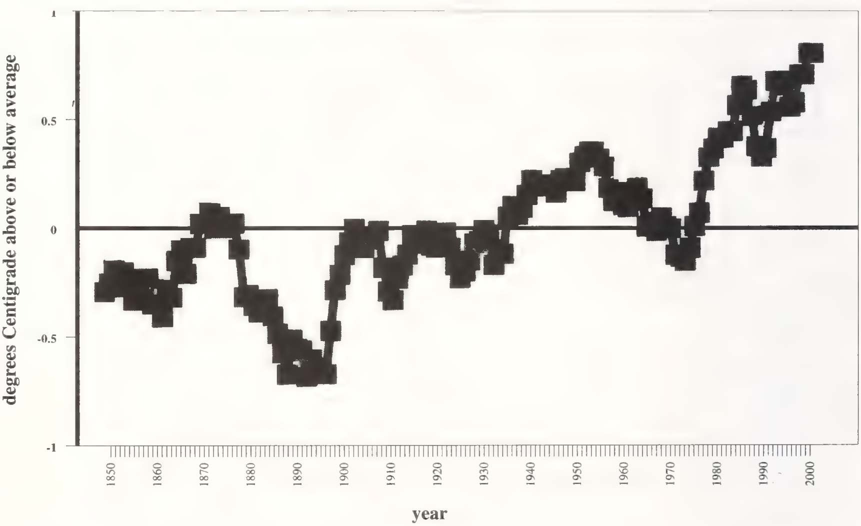

Fig. 12. A ten year running average of the annual temperature of England and Wales, 1850 to 1998.Calculated using the long-term average (1659 to 1998) of 9.40 degrees Centigrade, obtained from base data in Central Statistical Office, 1933 et seq.; Manley, 1974; and Whitaker, 1994 et seq.

It has already been proposed here that the birth of the Pine Hawk's extension in range is dated to 1925 or 1928, all previous authorities agreeing that it was under way during the 1930s. During a 200 year-long history, the timing precisely coincides with the start of the long-term increase in the hemisphere's annual temperature. The only significant sequential reversals in the 10-year average temperature trend in England and Wales since that time took place from 1950 to 1956, from 1962 to 1974, and from 1985 to 1987, inclusive (Manley, 1974: Central Statistical Office, 1933 et seq.). All of these periods coincide with an arrest in the insect's territorial ambitions in this m

country. For example, at the northern-most extremity of its range during the third quarter of the 20th century, the moth went completely undetected in the whole of Lincolnshire between 1956 and 1975 inclusive, since when it has been regularly seen (R. Johnson). Similarly, after being noted at South Thoresby in the same county in 1976, it was 1992 before the species had penetrated another 25 miles further north to Spurn Head to make the first of a series of Yorkshire records (P. Q. Winter). These coincidences strongly suggest that above average annual temperatures either stimulated a fresh race of continental *pinastri* to cross the English Channel and invade Dorset, or provided a more advantageous climate for a long-established "native" foothold previously naturally held in check. In an attempt to determine the stage of development in which the majority of Pine Hawk losses take place, graphs of July temperature (ova), August and September (larva), October to May (pupa), and from June to July (adult), were drawn up from base data (Manley, 1974: Central Statistical Office, 1933 et seq.) and again compared with the moth's territorial history, but all have serious irreconcilable anomalies.

A European perspective

During the 19th century Scots Pine *Pinus sylvestris* was described as "the typical Pine-tree of Northern Europe, where (especially in Russia and Northern Germany) it constitutes huge forests". Here it was "said to cover far wider tracts of country than any other forest tree" (Step, c.1910). However, the Hawk moth's 20th century boundaries only show a very loose agreement with the predominantly naturally-coniferous regions as illustrated in 1935 (Philip, 1935) and 1978 (Fitter, 1978). Its very early range in Spain and western France is even less sympathetic, although here the record of *S. pinastri* may well have been unwittingly contaminated with those of *S. moraurum* and, during both centuries, further more northern incompatibilities could be explained by migrations. Whatever, the early localities of the Pine Hawk on the European mainland were admirably and comprehensively determined by Tutt, when he listed all known sites (with limited dating) at the beginning of the 20th century (Tutt, 1904). The distribution map (Fig. 13) has been created here from Tutt's collation of more than 200 localities, together with a recently published map, (Fig. 14), compiled of more modern records (Danner, Eitschberger, & Surholt, 1998) for comparison.

The Pine Hawk moth's habitat has recently been described as being "open or mixed pine forests, especially... dry heaths; also in mountain conifer forests up to 1600m in the Alps" (Pittaway, 2000). Several 19th century authorities stated that *S. pinastri* larvae were "very abundant" and "sometimes very destructive to pine-forests on the Continent" (Meyrick, 1895). This was especially so in Central Europe (Kirby, 1897), but apparently not early on in Austria as the moth went unmentioned in "A Treatise on Insects Injurious to Gardeners, Foresters, & Farmers" (Kollar, 1840). One such event took place at Brandreis in Germany in 1827, when caterpillars swarmed "in such numbers that, in certain firwoods, the trees were completely stripped, and the pupae were so abundant in the autumn that they were used for feeding swine" (Tutt, 1904). Unusually high levels of larvae still sometimes occur (Gninenko, 1998), even

though "Wild larvae are often parasitised by ichneumons and flies" (Friedrich, 1986) – and more than two dozen parasitoid species have recently been identified (Pittaway, 2000).

Tutt observed that adults occurred "abundantly in many localities", although this may have been mainly restricted to "young plantations" – the species only flew "somewhat sparingly in most of the old pine forests... as well as in pine thickets that have long been isolated". In the Hartz mountains in Germany the insect also inhabited "the moor districts, probably spreading there from the lower forest region", while in Switzerland and the Albarracin district in Spain *S. pinastri* was established "for some distance up the mountains... to an elevation of a least 5000ft" (about 1,500m) (Tutt, 1904). Evidently the species was well distributed in France during the 19th century, where it was "very common, (in) woods round Paris" and "common" at Roumore and Nohant; in Germany it was commonplace in many areas and "very common" in the Rhine Palatinate; and it occurred "throughout" Belgium, Austria, and Czechoslovakia. The European record also proves that the moth could sometimes occur both in the comparatively dry and bitter cold of the Arctic Circle – under far more extreme conditions than were ever endured in Scotland – and in the heat of countries bordering the Mediterranean Sea. The extremities of its range then extended from woods in northern-most parts of Spain and Italy to Lapland, and at least as far east as Moscow and the Ural Mountains (Tutt, 1904). Even though the genetics of "European forms of a given species can tolerate a greater range of climatic extremes, particularly temperature", when compared to strains in the UK (Ford, 1982), whether the moth ever successfully bred in the coldest extremes seems unlikely. The species has also been unable to permanently colonise the hottest areas of Europe, including Portugal, most of Spain and the Italian peninsula, although there has apparently been an isolated record from Greece. The British records made in the south and east are in accord with this distribution, but those in the west and to the north of the River Severn are curiously discontinuous.

In 1931, K. Jordan divided the European Pine Hawk-moths into four subspecies, *Hyloicus (Sphinx) pinastri pinastri*, *H. p. medialis*, *H. p. maurorum*, and *H. p. cenisius* (Jordan, 1931), and almost half a century later another was proposed, *Sphinx p. euxinus* (Derzhavets, 1979). The subject is still under debate, three of the suggestions having recently been both authoritatively synonymised with the nominate race (Pittaway, 1993; 2000) and kept separate (Danner, Eitschberger, & Surholt, 1998). Whatever, *maurorum* is now acknowledged a distinct species by all, its distribution apparently being restricted to southern France (the northern-most record known was towards mid-France at Chateauroux, August 2002, by C.W. Plant), the eastern half of the Iberian Peninsula, and the north coast of Africa (Danner, Eitschberger, & Surholt, 1998: Pittaway, 2000). But all of these moths are generally so similar in appearance that the races, subspecies, and full species, can only be separated from straightforward *S. pinastri pinastri* by an examination of their genitalia (Jordan, 1931: Pittaway, 2000) – and these have been well illustrated (Jordan, 1931: Danner, Eitschberger, & Surholt, 1998) – and appear to breed and successfully hybridise together (including *S. maurorum*) (Pittaway, 2000). Whether or not Iberian-sourced *S. maurorum* have ever

occurred in the British Isles is therefore unknown, as every one of these insects would have been identified as the Pine Hawk by 19th century entomologists. To ensure compatibility, all are therefore embraced in the following distribution maps.

A comparison of the range held by pine-feeding Hawk-moths on the continent during early times with that of recent years shows an apparent retreat from south-western France and a concurrent colonisation of Denmark and Poland. This shift in European territory towards the north and east may have been concurrent with that in the same direction in England, but dated data is lacking. It has also been pointed out that *S. maurorum* has apparently displaced *pinastri* "in many southern areas" of France "over the last 20 years" (Pittaway, 2000).

Conclusion

There seems to be a combination of reasons for the complicated eccentricities of the early history of the Pine Hawk in Great Britain. The most likely true interpretation of the known facts is that the species has been an episodic immigrant from the continent for at least 200 years, and that this trait was the source of many of our early records and colonies. Just how much accidental importation played in this scenario is uncertain – it is impossible to logically differentiate between some records of immigrants and pioneering natives, their descendants, or chance conveyances and their offspring – but it is also impossible to dismiss the high coincidence between the geographical location of shipping ports and early *pinastri* records.

Judging strictly from the entomological record, the moth was intermittently resident in Scotland from the late 18th century until at least 1861, just possibly to 1928. Elsewhere, in Suffolk the species has been permanently established since at least 1872, possibly from before 1832, and near London from 1884 to 1907. Settlements in the eastern Dorset area have probably been in existence since at least the 1900s, possibly since the outlying southern Somerset sighting of 1853. However, the evidence provided by the exclusive presence of all three conglomerations of English colonies to Tertiary sand implies longer residencies, back to before the second quarter of the 19th century.

There can only be two possibilities that satisfactorily explain the increase in range since the 1920s. During this decade either the insect and/or the environment changed – either a new better-adapted race evolved in Dorset or freshly arrived from the continent, or the country's environment altered to become less detrimental to a race previously naturally held in severe check – enabling the species to overrun traditional settlements and eventually colonise much of eastern England. The precise coincidence of the Pine Hawk's hesitant territorial history with episodic rising temperatures during the 20th century prove that it was climate that has fundamentally dictated events, this perhaps explaining a parallel story on the continent. Distribution maps which illustrate the sequence of dated *pinastri* records between the 1920s and 1950s also show that the colonisation of England exclusively emanated from south-eastern Dorset. During the entire length of that climatically advantageous forty year period, this country's longest-known permanent settlements in Suffolk made no new concurrent expansion in range whatever – and this confirms that the insect's two early

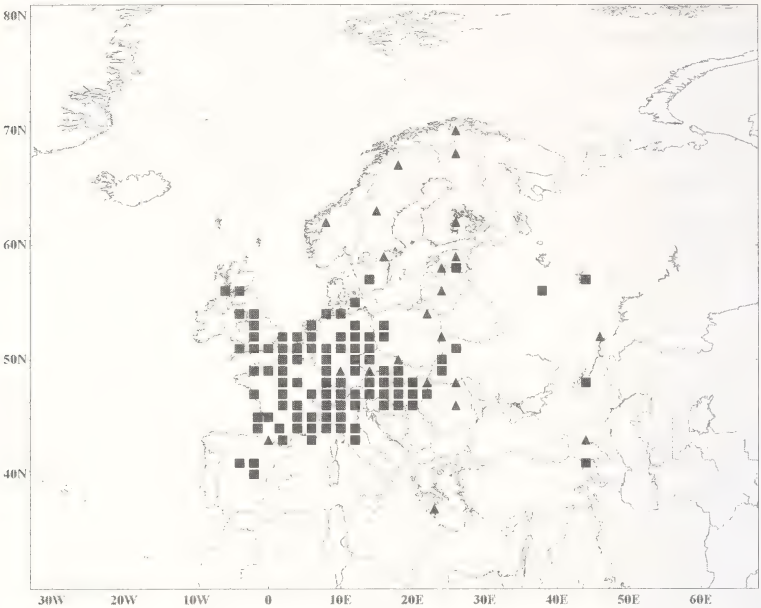

Fig. 13. The distribution of *S. pinastri* and *S. maurorum* in Europe, up to 1907.

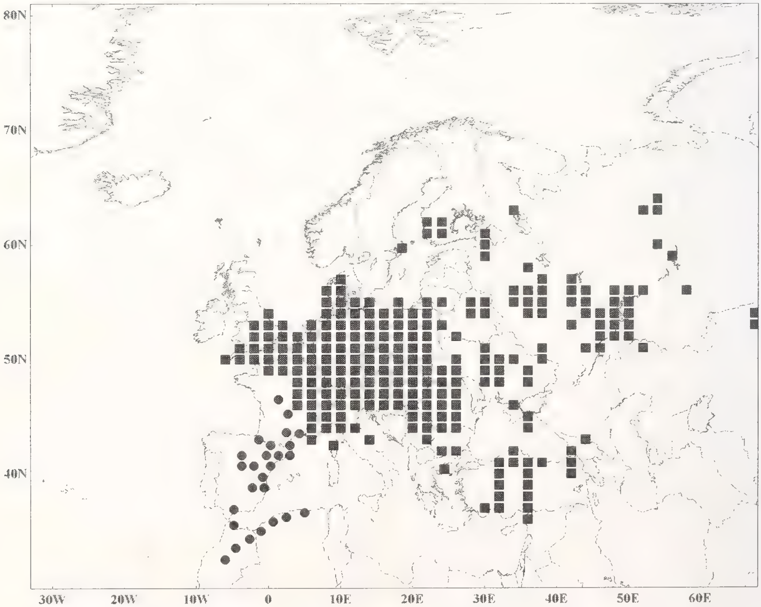

Fig. 14. The distribution of *S. pinastri* and *S. maurorum* in Europe, 1908 to 2002.

20th century headquarters were indeed composed of different races, the most southerly of which was, or became, better tailored to colonise England when rising temperatures came into effect. This judgement is also supported by the territorial history of the species colour forms. Whether or not the failure of the Suffolk colonies to extend their range was due to genetic differences which impinged upon their capacity to thrive under the same new climatic regime as our other main establishments, or to straightforward inbreeding (suggested by the low fertility rate and higher than usual levels of abnormal pale colour forms), has yet to be determined.

The future

While the intimate truth about all of the 19th century British records may now never be known for certain, recent scientific advances in the identification and matching of gene sequences could yet reveal much more about the origin of this insect's settlements. And, despite apparent compatibility within photographic illustrations of the genitalia of modern continental *S. pinastri pinastri* (Danner, Eitschberger, & Surholt, 1998) with some of those drawn prior to 1938 from Great Britain (Pierce & Beirne, 1975), the whole of this splendid insect's history entreats further such microscopic research into our Pine Hawk-moths, including comparisons of historic specimens from Scotland, Suffolk, and elsewhere, with those found in our current population and on the European mainland. With regard to future fieldwork, a comparison of modern-day Suffolk larvae with Victorian descriptions should confirm that a change to a brighter colouration has taken place – and an intensive investigative hunt for adults in its old Scottish haunts could still produce a surprise.

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Generic Names of Scarabaeoidea (Col.): a postscript

David Atty has furnished me with cogent data regarding the origin of the name *Aphodius*, which I had over-hastily treated in my recent notes as one of the more obscure names from the semantic standpoint – though its formation is clear. He shows that it evidently refers to a departure from the road or path (apo, hodos), probably for the purpose of obeying a call of nature, and cites cognate words in *Aristophanes, Aristotle* and *Plato*. I thank Mr Atty for illuminating the matter by the light of his scholarship.– A. A. ALLEN, 49 Montcalm Road, London SE7 8QG.

MICROLEPIDOPTERA REVIEW OF 2001

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Abstract

New vice-county records and other noteworthy records of microlepidoptera made in the British Isles during the year 2001 are listed and discussed.

Introduction

It is pleasing to report that the year 2001 produced an excellent crop of new records for microlepidoptera, despite yet another season when leaf-miners were generally scarce and the overall number of moths recorded was regarded as poor.

The weather in 2001 was very variable and at times dramatic. The early months were rather sunny and dry in the southern half of the UK, but Scotland had far more snow than in recent years, in a return to more "typical" Scottish winters. There were also short spells of colder weather in other parts of the UK but generally the recent milder winter conditions were repeated. April was rather wet but of average temperature and May was dry to start with but became dull and wet in the latter half in the south. However, the north was sunnier than normal before a cool and changeable June everywhere. June is often the high point for recording adult micros, and so the poor weather was most disappointing and it is some time since Britain had sunny and warm weather in early summer. July was an average month in most places, but was dull in the north, and August had its usual episodes of very warm conditions, with record highs at the bank holiday weekend. By September it had become rather dull and cool, although significantly sunnier than usual in Northern Ireland. Finally, the last part of the year was generally very mild, with some episodes of very heavy rain but also drier than usual spells in between.

Interest in microlepidoptera seems to be increasing for at least the larger species, with many more recorders including the Pyralidae in their remit. Perhaps this is due to the availability since the 1980s of Barry Goater's excellent book but it is surely also because of the active recording scheme run by Tony Davis. This is due to result in a provisional atlas in 2003 and all recorders are urged to send in their records in time for this, so that it is as complete as possible. The journal *Atropos* has also helped, for pyralids feature strongly on its pages and its colour plates have allowed the illustration of difficult species, such as those in the genus *Dioryctria*. However, the smaller and more obscure micro species remain poor relations and cryptic species such as the Psychidae are very much neglected. With the arrival of volume 4 of *The Moths and Butterflies of Great Britain and Ireland*, there is now a reasonably recent text on all the micros, and we do hope that this will encourage more attention for all of them. There are also embryonic recording schemes for some other groups, including the leaf-miners and the Gelechiidae and it is hoped that these will also help generate interest.

The field work needed to produce information for volume 4 of *MBGBI* has resulted in much more understanding of the life cycles of the Oecophoridae and Gelechiidae, with a number of species such as *Levipalpus hepatariella* (Lienig & Zeller) and *Dichomeris juniperella* (Linnaeus) being bred in Britain for the first time, showing what can be achieved with focus on neglected groups. The wealth of new records at the northern and western edges of known distributions also shows that there is much to be gained by exploring new areas and we do hope that this will continue. It is also clear that some species are continuing to spread rapidly, following their invasion of Britain, often taking advantage of the widespread occurrence of their foodplants in parks and gardens. Notably *Phyllonorycter platani* (Staudinger), *P. leucographella* (Zeller), *Argyresthia trifasciata* Staudinger and *A. cupressella* Walsingham have all been recorded many miles from their "beach-head", with *P. leucographella* even reaching Scotland.

There are a number of species that are new to the UK but some of these are adventives that have been found as larvae on imported plants. Pomegranates produced both *Stathmopoda diplaspis* (Meyrick) and *Anatrachyntis badia* (Hodges), for example, and *Diplopseutis periersalis* (Walker) is an Australian species that is also clearly adventive. A second specimen of *Herpetogramma licarsisalis* (Walker) was also found, following the first in the Isle of Wight in 1998, and this hails from the tropics and is probably also a casual import. A single specimen of *Cosmopterix pulchrimella* Chambers was taken in Dorset, and subsequent searches for its larvae on *Parietaria* were unsuccessful, so it is thought that the specimen must have been a stray. However, other new species seem to be either previously overlooked or newly invading species. Bob Heckford kindly allows us to mention *Syncopacma albifrontella* (Heinemann) which he found in Aberdeenshire and which will soon be the subject of a formal paper. This would seem to be a long term resident that has been previously overlooked. *Dioryctria sylvestrella* (Ratzeburg) is more difficult to explain. It belongs to a group that is very difficult to identify and it may be a long term resident that has been previously confused with others in the same genus. However, since publication of details on how to distinguish it from the others, a number of collections have been searched carefully and the earliest specimen discovered dates only from 1995. Since then it is now known to have been caught in East Anglia and from Kent to Dorset. Perhaps it is a new arrival from the Continent, where it is said to be widespread. Although *Catoptria verellus* (Zincken) is not entirely new, the two specimens recorded from Kent and Hampshire are the first since 1895. It seems likely that these new specimens were strays from France.

Mention should finally be made of those species that have been found well away from their usual range, or that are so rare as to deserve special attention. *Bohemannia auriciliella* (Joannis) is highly restricted and little known but has now been found in four counties in Southern England. *Leucoptera lathyrifoliella* (Stainton) and *Phtheochroa sodaliana* (Haworth) are both new to Wales; the former is otherwise recorded mainly from S and SW England and the latter from chalk and limestone areas of E and SE England, Cumbria and the Burren. *Gelechia cuneatella* Douglas is mostly restricted to SE England and East Anglia but has old records from Yorkshire and its occurrence from South Lancashire may indicate that it is actually still found in the northern part of its range. Finally *Lampronia pubicornis* (Haworth) has been bred

from Aberdeenshire but is otherwise only known from limestone areas of northern England and from the Burren and the Isle of Man. The new Scottish site is quite atypical and makes the single other Scottish record seem more likely and significant.

We are most grateful to the following recorders for their many records and help. In the text they are indicated by their initials, whereas other names are spelt out fully. D.J.L. Agassiz, J. Baker, H.E. Beaumont, K.P. Bland, A. & J. Coates, P.D.M. Costen, A.M. Davis, B. Dickerson, R.J. Dickson, R.D. Edmunds, B. Elliott, M.J. Ellis, C.H. Fletcher, R.G. Gaunt, D.J. Gibbs, B. Goodey, D.G. Green, A. Graham, J.N. Greatorex-Davies, R.J. Heckford, B.P. Henwood, R.I. Heppenstall, J. Higgott, S.H. Hind, D. Hipperson, M.R. Honey, I. Kimber, S.A. Knill-Jones, J.R. Langmaid, N.A. Littlewood, K. McCabe, J.A. McGill, A.J. Mackay, D.V. Manning, A. Musgrove, D. O'Keeffe, R.M. Palmer, S.M. Palmer, M.S. Parsons, S.J. Patton, C.W. Plant, A.W. Prichard, J.T. Radford, A.P. Russell, M.A. & W.J. Scott, M. Skevington, D.J. Slade, E.G. Smith, M.H. Smith, P. Talbot, I.R. Thirlwell, M.R. Young.

We include records that are new to each vice-county, as judged by the maps now held by JL but "inherited" from Maitland Emmet; as well as significant records of rare or little known species. The aim of all this effort is to help microlepidopterists appreciate the importance of their own records by having an up to date view of the distribution of each species. So many years' worth of new records have now accumulated that for some families (such as the Nepticulidae), it is quite difficult to visualise the current map. This emphasises the need for schemes that aim to produce regular distribution maps and we wish to encourage these. Please do write to us with comments and suggestions for improvements to our current annual reviews.

We do hope that current recorders will provide new records for 2002 and that new recorders are encouraged to come forward. We welcome all records that extend the knowledge of our microlepidoptera and are willing to check records against our database of existing vice-county records. Please also help by sending in records in the exact format in which they are published here, to save re-typing with possible errors creeping in, and do send records electronically if that is possible, using the address "john@langmaidj.freeserve.co.uk". In the systematic list the nomenclature follows that of John Bradley's 2000 check-list and the numbers are those of the "log book".

SYSTEMATIC LIST

ERIOCRANIIDAE

8 *Eriocrania unimaculella* (Zett.) — Brewlands Bridge (**90**) tenanted mines 2.vi.2001 — JRL

12 *E. sangii* (Wood) — Brewlands Bridge (**90**) tenanted mine 2.vi.2001 — JRL

13 *E. semipurpurella* (Steph.) — Brewlands Bridge (**90**) tenanted mine 2.vi.2001 — JRL

NEPTICULIDAE

33 *Bohemannia auriciliella* (Joann.) — Pine Wood (**22**) 22.vi.2001, genitalia det. — DJG

20 *Ectoedemia decentella* (H.-S.) — Markfield (**55**) 2.vii.2001 — AJM

25 *E. intimella* (Zell.) — Risley Moss (**59**) mine on *Salix* sp. 7.xi.2001 — SHH & KM; Cromwell Bottom NR (**63**) tenanted mines on *Salix caprea* 23.xi.2001 — PT

26 *E. agrimoniae* (Frey) — Selborne (**12**) mines on *Agrimonia eupatoria* 13.x.2001 — RDE

30 *E. arcuatella* (H.-S.) — Northwich (**58**) tenanted mine on *Potentilla reptans* 9.ix.2001 — SHH & A. Wander

31 *E. rubivora* (Wocke) — Ripon (**64**) vacated mines on *Rubus caesius* and *R. fruticosus* xi.2001 — CHF

34 *E. occultella* (Linn.) — Balinoe (**106**) vacated mines on *Betula* 4.xi.2001 — D. Williams *per* MRY

35 *E. minimella* (Zett.) — North Dean (**63**) mines on *Betula* 16.ix.2001 — SHH, IK & PT

36 *E. quinquella* (Bed.) — Staplegrove (**5**) vacated mines on *Quercus robur* 30.xi.2001 — JAMcG; Gilston (**20**) tenanted mines on *Quercus robur* 18.x.2001 — CWP, *Ent. Rec.* **113**: 255-256

37 *E. albifasciella* (Hein.) — Carbisdale (**106**) vacated mines on *Quercus* 4.xi.2001; Altass (**107**) vacated mines 4.xi.2001 — D. Williams *per* MRY

38 *E. subbimaculella* (Haw.) — Brackley Gate (**57**) mines on oak 3.xi.2001 — SHH

39 *E. heringi* (Toll) — Moidart (**97**) mines 17.xi.2001 — MRY

56 *Stigmella dryadella* (Hofm.) — Caenlochan Crags (**90**) mines on *Dryas* 27.vii.2001 — KPB

64 *S. continuella* (Staint.) — Carrington Moss (**58**) vacated mine on *Betula* 11.x.2001 — KM & SHH; North Dean (**63**) vacated mines on *Betula* 16.ix.2001 — SHH, IK & PT

65 *S. speciosa* (Frey) —Crakemarsh (**39**) mine on *Acer pseudoplatanus* 22.ix.2001 — SHH

67 *S. plagicolella* (Staint.) — Linside (**107**) vacated mines on *Prunus spinosa* 28.x.2001 — D. Williams *per* MRY

70 *S. obliquella* (Hein.) — Ribchester (**60**) vacated mine on *Salix alba* 8.x.2001 — KM & SMP

74 *S. assimilella* (Zell.) — Ellesmere Port (**58**) vacated mine on *Populus alba* 22.viii.2001 — SHH

75 *S. floslactella* (Haw.) — Strathoykel (**106**) vacated mines on *Corylus* 4.xi.2001 — D. Williams *per* MRY

81 *S. hemargyrella* (Koll.) — Achany (**107**) vacated mines on *Fagus* 16.x.2001 — D. Williams *per* MRY

82 *S. paradoxa* (Frey) — Cheddleton (**39**) mines on *Crataegus* 10.viii.2001 — SHH

83 *S. atricapitella* (Haw.) — Cannop (**34**) mines 26.xi.2000 — MJE; Brackley Gate (**57**) vacated mines on oak 3.xi.2001 — SHH

85 *S. suberivora* (Staint.) — Bullen Hill Farm (**8**) mine on *Quercus ilex* 14.x.2000 — EGS & MHS

86 *S. roborella* (Johan.) — Skelmersdale (**59**) vacated mines on *Quercus* x.2001 — C. Darbyshire *per* SMP

102 *S. aceris* (Frey) — Tower Hamlets (**21**) vacated mine on *Acer campestre* 11.xii.2001 — CWP

103 *S. nylandriella* (Tengst. — Ashridge (**20**) mines on *Sorbus aucuparia* 4.viii.2001 — C. Watson *per* CWP, *Ent. Rec.* **113**: 255-256

108 *S. crataegella* (Klim.) — Lower Gledfield (**106**) vacated mines on *Crataegus* 4.xi.2001 — D. Williams *per* MRY

111 *S. microtheriella* (Staint.) — Strathoykel (**106**) — vacated mines on *Corylus* 4.xi.2001 — D. Williams *per* MRY

114 *S. glutinosae* (Staint.) — Altass (**107**) vacated mines on *Alnus glutinosa* 11.xi 2001 — D. Williams *per* MRY

115 *S. alnetella* (Staint.) — Altass (**107**) vacated mines on *Alnus glutinosa* 28.x.2001 — D. Williams *per* MRY

TISCHERIIDAE

123 *Tischeria ekebladella* (Bjerk.) — Inchmarlo (**91**) mine on oak 14.xi.2001 — RMP

PRODOXIDAE

136 *Lampronia corticella* (Linn.) — Carbeth Estate (**86**) 12.vi.2001 — JRL

138 *L. fuscatella* (Tengst.) — Potteric Carr, Doncaster (63) 25.v.2001, first Yorkshire record for 83 years — HEB

139 *L. pubicornis* (Haw.) — Inver (**92**) pupa in spun leaf of *Rosa sherardii*, moth bred, genitalia det. KPB, furthest north and second Scottish record, previously unrecorded foodplant — RMP & JRL

ADELIDAE

145 *Nemophora minimella* ([D. & S.]) — Tailend Moss (**84**) 15.vii.2001 — KPB

PSYCHIDAE

191 *Acanthopsyche atra* (Linn.) — Stokeford Heaths (9) case containing pupal exuviae 20.v.2001 — DJG

TINEIDAE

200 *Psychoides filicivora* (Meyr.) — Coomb (**44**) 19.v.2001 — S. Bosanquet & JB

BUCCULATRICIDAE

272 *Bucculatrix cidarella* Zell. — Altass (**107**) empty mine on *Alnus glutinosa* 11.xi.2001 det. MRY — D. Williams *per* MRY

273 *B. thoracella* (Thunb.) — Fleet (**12**) mines on *Tilia* X *vulgaris* 20.x.2001 — RDE; Cardiff (**41**) 30.viii.2001 — DJS; Rossington (**63**) 1.viii.2001 — RIH

GRACILLARIIDAE

281 *Caloptilia populetorum* (Zell.) — Ipswich (**25**) 26.vi.2001 — N. Sherman *per* AWP

284 *C. rufipennella* (Hübn.) — Crakemarsh (**39**) spinnings on *Acer pseudoplatanus* 22.ix.2001 — SHH; Hutton Conyers, Ripon (**65**) 3.iv.2001, det. HEB — CHF

285 *C. azaleella* (Brants) — Rickmansworth (**20**) 21.iii.2001 — P. Clack *per* CWP, *Ent. Rec.* **113**: 255-256; Whetstone (**55**) 25.v.2001 — MS; Blackford (**83**) 1.vii.2001 — KPB

287 *C. robustella* Jäckh — Hutton Conyers (**65**) 30.vii.2001, det. HEB — CHF

288 *C. stigmatella* (Fabr.) — Mabie Forest (**73**) mines on *Salix* 22.ix.2001 — RMP

301 *Parornix betulae* (Staint.) — Craggan Wood (**94**) 25.v.2001 — MRY

302 *P. fagivora* (Frey) — Llanarthne (**44**) larval sp inning on *Fagus* 27.vii.2001 — DJS

302a *P. carpinella* (Frey) — Rockbourne (**8**) mines and spinnings on *Carpinus betulus* 3.x.2001 — DGG

308 *P. finitimella* (Zell.) — Crakemarsh (**39**) larvae on *Prunus spinosa* 22.ix.2001 — SHH; Abbotsholme School (**57**) larvae on *P. spinosa* 4.x.2001 — SHH; Alsager (**58**) larvae on *P. spinosa* 29.ix.2001 — E. Kearns, B.T. Shaw & SHH

313 *Acrocercops brongniardella* (Fabr.) — Davenham (**58**) vacated mines on oak 13.x.2001 — KM, B.T. Shaw, A. Wander & SHH; St Helens (**59**) 25.vii.2001 det. SMP — D. Owen *per* SMP

321a *Phyllonorycter platani* (Staud.) — Ipswich (**25**) mines on *Platanus* 1.x.2001 — N. Sherman *per* AWP; Great Livermere (**26**) mine 24.xi.2001 — D. Underwood *per* AWP; Bristol (**34**) mine 17.xi.2001 — DJG

323 *P. oxyacanthae* (Frey) — Lower Gledfield (**106**) mines on *Crataegus* 4.xi.2001; Linside (**107**) mines 28.x.2001 — D. Williams *per* MRY

326 *P. blancardella* Fabr. — Hutton Conyers (**65**) mines on apple 4.xi.2001, moths bred, genitalia det. HEB — CHF

329 *P. spinicolella* (Zell.) — Linside (**107**) mines on *Prunus spinosa* 28.x.2001 — D. Williams *per* MRY

332a *P. leucographella* (Zell.) — Cowes (**10**) mines on *Pyracantha* 31.iii.2001 — D.T. Biggs *per* JRL, *Ent. Rec.* **114**: 44; Swineholes Wood (**39**) mine on *Sorbus aucuparia* 9.viii.2001 — SHH; Bynea (**44**) mines 28.x.2001 — B. Stewart *per* JB; Lightfoot Green (**60**) 12.x.2001 tenanted mine on *Pyracantha* — SMP

342 *P. coryli* (Nic.) — Strathoykel (**106**) mines on *Corylus* 4.xi.2001 — D. Williams *per* MRY

343 *P. quinnata* (Geoffr.) — Goblin Combe (**6**) mines on *Carpinus* 23.ix.2001 — MJE; Crakemarsh (**39**) mines 22.ix.2001 — SHH; Brighouse (**63**) mines on *Carpinus* 28.x.2001, moths bred — PT & IK

344 *P. strigulatella* (L. & Z.) — Lower Walditch (**9**) mines on *Alnus incana* 18.xi.2001, moths bred — MSP

354 *P. emberizaepenella* (Bouché) — Mabie Forest (**73**) mines on *Lonicera* 22.ix.2001 — RMP

357 *P. stettinensis* (Nic.) — Haresfield (**33**) 2.vi.2001 — R. Pearce *per* RGG; Llanarthne (**44**) mines 27.vii.2001 — DJS

359 *P. nicellii* (Staint.) — Strathoykel (**106**) mines on *Corylus* 4.xi.2001 — D. Williams *per* MRY

363 *P. platanoidella* (Joann.) — Rockbourne (**8**) mines on *Acer platanoides* 19.viii.2001 — DGG; Tattingstone (**25**) mines on *Acer platanoides* 23.x.2000; Knettishall Heath (**26**) mines 27.x.2001 — AWP; Bristol (**34**) mines 10.x.2001, moth bred — DJG; Abbotsholme School (**57**) mine 4.x.2001 — SHH

CHOREUTIDAE

388 *Prochoreutis myllerana* (Fabr.) — Balavil Fen (**96**) 22.vii.2001 — MRY

GLYPHIPTERIGIDAE

393 *Glyphipterix equitella* (Scopoli) — Billinge (**59**) 6.vii.2001 — C. Darbyshire *per* SMP

YPONOMEUTIDAE

407 *Argyresthia dilectella* Zell. — Hutton Conyers (**65**) 15.vii.2001, det. HEB — CHF

409a *A. trifasciata* Staud. —. Stony Stratford (**24**) 31.v.2001, det. DVM — M. Killeby *per* DVM; Ipswich (**25**) 29.v.2001 — AWP; Cambridge (**29**) larvae in shoots of *Chamaecyparis lawsoniana* 6.ii.2001, moth bred — DJLA & JRL; St Ives (**31**) 24.v.2001 — JNG-D; St Annes (**60**) 26.v.2001 — J. Steeden *per* SMP

409b *A. cupressella* Wals. — Pine Wood (**22**) 22.vi.2001 — DJG

420 *A. pruniella* (Cl.) — Hutton Conyers (**65**) 23.vi.2000 — CHF

425 *Yponomeuta padella* (Linn.) — House of Dun (**90**) vi.2001 — MRY

426 *Y. malinellus* Zell. — Hutton Conyers (**65**) 14.vii.2001, det. HEB — CHF

428 *Y. rorrella* (Hübn.) — Rossington (**63**) 30.vii.2001 — RIH

430 *Y. plumbella* ([D. & S.]) — Morfa (**44**) 25.viii.2001 — JB

431 *Y. sedella* Treits. — Coedmore (**45**) — larvae on *Sedum telephium* 1.x.2001 — MSP

435 *Zelleria hepariella* Staint. — Hexton Chalk Pit (**20**) 20.x.2001 — CWP, *Ent. Rec.* **113**: 255-256

440 *Paraswammerdamia albicapitella* (Scharf.) — Oldbury (**34**) 28.vii.2000 — DJG

448 *Atemelia torquatella* (L. & Z.) — Mabie Forest (**73**) tenanted mines on *Betula pubescens* 22.ix.2001 — RMP

456 *Ypsolopha horridella* (Treits.) — Freshwater (**10**) 19.viii.2001 — SAK-J, *Ent. Rec.* **114**: 44

252 *Ochsenheimeria urella* F. v. R. — Wavering Down (**6**) 15.vii.2001 — DJG

465 *Plutella porrectella* (Linn.) — Hutton Conyers (**65**) vii.2000 — CHF

468 *Rhigognostis incarnatella* (Steud.) — Ordiquhill (**94**) 23.ix.2001 — R. Leverton, *Atropos* **16**: 77

473 *Acrolepiopsis assectella* (Zell.) — Gravesend (**16**) 10 & 27.viii.2001 — DJLA

476 *Acrolepia autumnitella* Curt. — Stony Stratford (**24**) 20.x.2001, det. DVM — M. Killeby *per* DVM; Crakemarsh (**39**) larvae on *Solanum dulcamara* 22.ix.2001, moths bred — SHH

LYONETIIDAE

258 *Leucoptera lathyrifoliella* (Staint.) — Tonfanau (**48**) imago 29.viii.2001, mines on *Lathyrus sylvestris* 8.ix.2001 — AG, **New to Wales**

260 *L. malifoliella* (Costa) — Oldbury (**34**) vacated mine on *Malus* 14.ix.2001 — DJG

COLEOPHORIDAE

488 *Goniodoma limoniella* (Staint.) — Welwick saltmarsh (**61**) cases 0n *Limonium vulgare* 30.v.2001, moths bred — HEB & RIH

490 *Coleophora lutipennella* (Zell.) — Hutton Conyers (**65**) 20.vii.2001, genitalia det. HEB — CHF

494 *C. coracipennella* (Hübn.) — Willen (**24**) 4.vii.2001, genitalia det. DVM — G.E. Higgs *per* DVM; Lightfoot Green (**60**) 6.vii.2001, genitalia det. — SMP

496 *C. milvipennis* Zell. — Astley Moss (**59**) cases on *Betula* sp. 9.ix.2001 – I. F. Smith *per* SMP

501 *C. siccifolia* Staint. — Leigh Woods (**6**) 30.vi.2001, genitalia det. — DJG

504 *C. lusciniaepennella* (Treits.) — Nosterfield NR (**65**) 28.vii.2001, genitalia det. HEB — CHF

512 *C. binderella* (Kollar) — Flixton (**59**) 19.vii.2001 genitalia det. SMP — KM

516 *C. trifolii* (Curt.) — Heysham NR (**60**) 6.vii.2001 — P. Marsh & SMP

520 *C. fuscicornis* Zell. — Colchester (19) 28.v.2001, first known inland site — BG

536 *C. betulella* Hein. — Nosterfield NR (**65**) 28.vii.2001, genitalia det. HEB — CHF

537 *C. kuehnella* (Goeze) — Leigh Woods (**6**) 30.vi.2001, genitalia det. — DJG

559 *C. peribenanderi* Toll — Hutton Conyers (**65**) 23.vi.2001, genitalia det. HEB — CHF

564 *C .virgaureae* Staint. — Bemersyde Hill (**81**) cases on *Solidago* 27.x.2001 — KPB

565 *C. saxicolella* (Dup.) — Hutton Conyers (**65**) 25.vii.2001, genitalia det. HEB — CHF

566 *C. sternipennella* (Zett.) — Gt Staughton (**31**) — 27.vii.2001 — BD

578 *C. otidipennella* (Hübn.) — Pembrey Burrows (**44**) 24.v.2001 — S. Bosanquet & JB

581 *C. taeniipennella* H. –S. — Daneway (**33**) 8.vii.2000 — EGS & MHS

582 *C. glaucicolella* Wood — Daneway (**33**) 8.vii.2000 — EGS & MHS

585 *C. maritimella* Newm. — Dawlish Warren (3) cases on *Juncus maritimus* 11.v.2001, moths bred, first record since 1925 — BPH

ELACHISTIDAE

609 *Elachista maculicerusella* Bruand — Llyn y gors (**44**) 5.vi.2001 — S. Bosanquet *per* JB

OECOPHORIDAE

638a *Denisia albimaculea* (Haw.) — Scole (**27**) vi.2001 — M. Hall *per* DH

644 *Borkhausenia fuscescens* (Haw.) — Spinningdale (**107**) 18.viii.2001 det. MRY — P. Entwistle *per* MRY

646 *Telechrysis tripuncta* (Haw.) — Studham (**30**) 28.vi.2001, det. DVM — C.R.B. Baker *per* DVM

649 *Esperia sulphurella* (Fabr.) — St Cyrus (**91**) 11.vi.2001 — RMP & JRL

654 *Pleurota bicostella* (Clerck) — Braelour (**109**) 3.vii.2001 — D. Williams *per* MRY

877 *Stathmopoda pedella* Herr.-Schaff. — Flixton (**59**) 27.vii.2001 — KM

877a *S. diplaspis* (Meyrick) — Plymouth (**3**) larva in pomegranate from Iran 8.xii.2000, moth bred — RJH, **Adventive new to the British Isles**

664 *Diurnea lipsiella* ([D. & S.]) — Foyers (**96**) 13.x.2001 — MRY; Ledmore (**107**) 5.xi.2001 det. MRY— P. Entwistle *per* MRY

667 *Semioscopis steinkellneriana* ([D. & S.]) — Hutton Conyers (**65**) 25.iv.2000, det. HEB — CHF

670 *Depressaria daucella* ([D. & S.]) — Hexton Chalk Pit (**20**) 18.viii.2001 — CWP, *Ent. Rec.* **113**: 255-256

671 *D. ultimella* Staint. — Stony Stratford (**24**) 27.v.2001, genitalia det. DVM — M. Killeby *per* DVM

685 *Levipalpus hepatariella* (L. & Z.) — Glen Tilt (**89**) 5.ix.2001 — RJH; Newtonmore (96) — larvae in tubes in soil around *Antennaria* 6.vi.2001, moths bred, first record of larvae in Britain — RJH & JRL

698 *Agonopterix kaekeritziana* (Linn.) — Ketton (**55**) 1.viii.2001 — R. Follows, J. Wright & APR

700 *A. pallorella* (Zell.) — Hexton Chalk Pit (**20**) 18.viii.2001 — CWP, *Ent. Rec.* **113**: 255-256

710 *A. conterminella* (Zell.) — Whetstone (55) 22.vii.2001, first record since VCH — MS

ETHMIIDAE

718 *Ethmia dodecea* (Haw.) — Freshwater (**10**) 7.vii.2001 — SAK-J, *Ent. Rec.* **114**: 44

722 *E. pyrausta* (Pallas) — The Cairnwell (**92**) at altitude 810m. 28.v.2001 — KPB

GELECHIIDAE

724 *Metzneria lappella* (Linn.) — Hutton Conyers (**65**) 20.vi.2001, det. HEB — CHF

726 *M. metzneriella* (Staint.) — Newtonmore (**96**) 6.vi.2001 — RJH & JRL

729 *Isophrictis striatella* ([D. & S.]) — Walberton (**13**) 1.vii.2001 — JTR

731 *Eulamprotes atrella* ([D. & S.]) — Cranmore (**10**) 24.vii.2001 — SAK-J, *Ent. Rec.* **114**: 44

741 *Monochroa suffusella* (Dougl.) — Stony Stratford (**24**) 1.vii.2001, genitalia det. DVM — M. Killeby *per* DVM

743 *M. elongella* (Hein.) — Tilshead (**8**) 20.vi.2001 — MSP

745 *M. divisella* (Dougl.) — Portland (**9**) 7.vii.2001 — M. Cade *per* PHS

750a *Psamathocrita argentella* P. & M. — Arne (**9**) larvae on *Elytrigia atherica* 9.viii.2001 — BE & JRL; Hayling Island (11) larvae in florets of *Elytrigia atherica* vii-viii.2001, confirming suspected host plant — IRT & JRL

754 *Xystophora pulveratella* (H. – S.) — Nethy Bridge (96) larvae on *Trifolium pratense* 14.ix.2000, moths bred, previously unrecorded foodplant in Britain — RJH

777a *Bryotropha dryadella* (Zell.) — Berry Head (3) larva amongst *Ctenidium molluscum* 8.iv.2001, moth bred — RJH; Swanscombe (**16**) and Grays (18) larvae amongst *Bryum* and *Barbula* spp. 29.iii.2001, moths bred — DJLA & RJH

782 *B. senectella* (Zell.) — Blairlogie (**87**) larvae amongst *Bryum* sp. 2.vi.2001, moth bred — RJH

784 *B. galbanella* (Zell.) — Adderstonelee Moss (**80**) — 2.viii.2001 — KPB

789 *B. domestica* (Haw.) — Arthur's Seat (**83**) larvae in moss 17.ii.2001, moths bred — KPB

760 *Exoteleia dodecella* (Linn.) — Strath Aird, Skye (**104**) 18.vii.2001 det. MRY — P. Entwistle *per* MRY

761 *Athrips tetrapunctella* (Thunb.) — Nethy Bridge (96) larvae on *Vicia cracca* 14.ix.2000, moths bred, previously unrecorded foodplant in Britain — RJH

770 *Carpatolechia proximella* (Hübn.) — Pickworth (55) 25.v.2001, first record since VCH — MS, AJM, APR & M. Rossell

771 *C. alburnella* (Zell.) — Willen (**24**) 23.vii.2001, det. DVM — G.E. Higgs *per* DVM; Orrell (**59**) 28.vii.2001 — P. Alker & C. Darbyshire *per* SMP

790 *Chionodes fumatella* (Dougl.) — Bath (**6**) 14.viii.2001, genitalia det. — DJG

793 *Mirificarma lentiginosella* (Zell.) — Earls Barton (**32**) viii.2001, genitalia det. DVM — C. Wiltshire *per* DVM

801a *Gelechia senticetella* (Staud.) — Fleet (**12**) 29.vii.2001 — MA&WJS; Ipswich (**25**) 25.vii.2001 — JH; Cambridge (**29**) larva on *Chamaecyparis lawsoniana* 6.ii.2001, moth bred — DJLA

804 *G. cuneatella* Dougl. — Flixton (**59**) 29.vii.2001, genitalia det. SMP & DJLA — KM, *Ent. Rec.* **114**: 92-93

819 *Scrobipalpa costella* (H. & W.) — Hutton Conyers (**65**) 23.xi.2001, det. HEB — CHF

821 *S. murinella* (Dup.) — Glen Tilt (**89**) larva and vacated mines on *Antennaria* 5.ix.2001 — RJH

822 *S. acuminatella* (Sirc.) — Dunhog Hill (**80**) mines with larvae on *Cirsium palustre* 1.vii.2001 — KPB

825 *Phthorimaea operculella* (Zell.) — Great Bentley (**19**) 10.viii.2001, genitalia det. — J. Clifton *per* BG

843 *Aproaerema anthyllidella* (Hübn.) — Pembrey Burrows (**44**) 10.v.2001 — JB; Newtonmore (**96**) 6.vi.2001 — RJH & JRL

844 *Syncopacma larseniella* (Gozm.) — Double Arches Quarry (Heath and Reach) (**30**) 22.vi.2001, det. DVM — C.R.B. Baker *per* DVM

847a *S. albifrontella* (Hein.) — Morrone Birkwood (**92**) 5.vi.2001, genitalia det. — RJH, **New to the British Isles**

854 *Anacampsis blattariella* (Hubn.) — Silverdale Moss (**60**) 24.vii.2001 det. SMP — P. Cleary-Pugh *per* SMP

863 *Dichomeris juniperella* (Linn.) — Crathie & Rinabaich (92) larvae on *Juniperus* 2-3.vi.2001, moths bred — RJH & JRL

868 *Helcystogramma rufescens* (Haw.) — Hutton Conyers (**65**) 16.vii.2001, det. HEB, confirming a previously unpublished record in 1979 — CHF

BLASTOBASIDAE

873 *Blastobasis lignea* Wals. — Hutton Conyers (**65**) 21.vii.2001, det HEB — CHF

874 *B. decolorella* (Woll.) — Pembrey Burrows (**44**) 28.vii.2001 — JB; Hutton Conyers (**65**) 23.vi.2001, det HEB — CHF; Stenton (**82**) 28.v.2001 — A.E. Whittington *per* KPB; St Cyrus (**91**) 11.vi.2001 — RMP & JRL

MOMPHIDAE

882 *Mompha locupletella* ([D. & S.]) — Brackagh Moss (**H37**) 16.vi.1999, det. MSP — A. Fowles *per* MSP

884 *M. miscella* ([D. & S.]) — St Mary's Loch (**79**) mines on *Helianthemum* 26.v.2001 — KPB

COSMOPTERIGIDAE

896b *Cosmopterix pulchrimella* Chambers — Walditch (**9**) 13.x.2001 — MSP, *Ent. Gaz.* **53**: 93-96, **New to the British Isles**

897a *Anatrachyntis badia* (Hodges) — Plymouth (**3**) larvae in pomegranates, probably from Spain, 22.ix – 13.xi.2001, moths bred — RJH, **Adventive new to the British Isles**

898 *Limnaecia phragmitella* Staint. — Duddington Loch (**83**) infested *Typha* heads 4.vii.2001; Uphall (**84**) infested *Typha* heads 9.vi.2001 — KPB

902 *Chrysoclista lathamella* Fletch. — Titchfield (11) 17.vi.2001— D.M. Appleton *per* RJD; Hickling Broad (**27**) 26.vi.2001 — DJLA

SCYTHRIDIDAE

918 *Scythris limbella* (Fabr.) — Markfield (**55**) 2.vii.2001, det. DJLA — AJM

920a *S. inspersella* (Hübn.) — Allerthorpe Wood (**61**) 30.vii.2001 — E.D. Chesmore *per* HEB

TORTRICIDAE

923 *Phtheochroa sodaliana* (Haw.) — Barry (**41**) 22.viii.2001 — D.R.W. Gilmore, M.C. Powell & DJS, **New to Wales**

929 *Gynnidomorpha vectisana* (H. & W.) — Llyn y gors (**44**) 5.vi.2001 — S. Bosanquet *per* JB

936 *Cochylimorpha straminea* (Haw.) — Cruden Bay (**93**) 28.vi.2001 — MRY

942 *Aethes piercei* Obraz. — Clais Fhearnaig (**92**) 3.vi.2001 — RJH & JRL

946 *A. rubigana* (Treits.) — Hutton Conyers (**65**) 25.vii.2001, det. HEB — CHF

949 *A. dilucidana* (Steph.) — Pembrey Burrows (**44**) 28.vii.2001 — JB

955 *Eupoecilia ambiguella* (Hübn.) — Catfield (**27**) 13.viii.2001 — A. Beaumont *per* DH

962 *Cochylis roseana* (Haw.) — Pembrey (**44**) 14.v.2001 — B. Stewart *per* JB; Nosterfield NR (**65**) 28.vii.2001, det. HEB — CHF

964a *C. molliculana* Zell. — Dymchurch (**15**) 30.vi.2001 — DO'K

966 *C. atricapitana* (Steph.) — Hutton Conyers (**65**) 15.vi.2001, det HEB — CHF

981 *Archips rosana* (Linn.) — Hutton Conyers (**65**) 24.vii.2001, det HEB — CHF

987 *Ptycholomoides aeriferanus* (H.-S.) — Hutton Conyers (**65**) 1.viii.2001, det HEB — CHF

998 *Epiphyas postvittana* (Walk.) — South Walney NR (**69**) 6.ix.1999 — NAL

999 *Adoxophyes orana* (F. v. R.) — Weymouth (**9**) 12.vi.2001 — PHS

1001 *Lozotaeniodes formosanus* (Geyer) — Hutton Conyers (**65**) 7.vii.2001, det. HEB — CHF

1008 *Philedone gerningana* ([D. & S.]) — Coull Links (**107**) 18.viii.2001 det. MRY — P. Entwistle *per* MRY

1023 *Cnephasia genitalana* P. & M. — Baldock (**20**) 25.vii.2001, genitalia det. DVM — K. Robinson *per* CWP; Stony Stratford (**24**) 22.vii.2001, det. DVM — M. Killeby *per* DVM; Rossington (**63**) 20.vii.2001, genitalia det. — RIH

1027 *Neosphaleroptera nubilana* (Hübn.) — Barry (**41**) 1.vii.2001 — DJS

1035 *Acleris bergmanniana* (Linn.) — Hutton Conyers (**65**) 16.vii.2001, det. HEB — CHF

1042 *A. rhombana* ([D. & S.]) — Auchernack (**95**) 4.x.2001 — MRY

1045 *A. notana* (Don.) — Auchernack (**95**) 4.x.2001 — MRY

1049 *A. permutana* (Dup.) — Pembrey Burrows (**44**) 29.viii.2001 — JB

1063 *Celypha striana* ([D. & S.]) — Hutton Conyers (**65**) 2.vii.2001, det. HEB — CHF

1073 *Olethreutes schulziana* (Fabr.) — Markfield (**55**) 15.viii.2001 — AJM

1079 *Piniphila bifasciana* (Haw.) — Markfield (**55**) 5.vii.2001 — AJM; Hutton Conyers (**65**) 7.vii.2001, det. HEB — CHF

1082 *Hedya pruniana* (Hübn.) — Hutton Conyers (**65**) 21.vi.2001, det. HEB — CHF

1085 *Metendothenia atropunctana* (Zett.) — Nosterfield NR (**65**) 28.vii.2001, det. HEB — CHF

1088 *Pseudosciaphila branderiana* (Linn.) — Middlebere (**9**) 26.vi.2001 — C. Manley *per* PHS

1097 *Endothenia gentianaeana* (Hübn.) — Pembrey (**44**) 14.v.2001 — B. Stewart *per* JB

1102 *E. nigricostana* (Haw.) — Pembrey (**44**) 14.v.2001 — B. Stewart *per* JB

1108 *Lobesia abscisana* (Doubld.) — Hutton Conyers (**65**) 26.vii.2001, det. HEB — CHF

1111a *Bactra lacteana* Caradja — Hutton Conyers (**65**) 1.viii.2001, genitalia det. HEB — CHF

1115 *Ancylis achatana* ([D. & S.]) — Hutton Conyers (**65**) 20.vii.2001, det. HEB — CHF

1123 *A. laetana* (Fabr.) — Craggan Wood (**94**) 25.v.2001 — MRY

1135 *E. demarniana* (F. v. R.) — Ratby (**55**) 30.vi.2001 — MS & AJM

1136 *E. immundana* (F. v. R.) — Hutton Conyers (**65**) 26.v.2001, det. HEB — CHF

1144 *E. signatana* (Dougl.) — Stony Stratford (**24**) 4.vii.2001, genitalia det. DVM — M. Killeby *per* DVM

1146 *E. rubiginosana* (H.-S.) — Ipswich (**25**) 26.vi.2001 — JH; Strath Aird, Skye (**104**) 18.vii.2001 det. MRY — P. Entwistle *per* MRY

1147 *E. cruciana* (Linn.) — Launde (55) 12.vii.2001, first record since VCH — H. Orridge, MS, AJM & APR

1157 *Crocidosema plebejana* Zell. — Holoman, Raasay (**104**) 19.vi.2000, det. PHS — S. Bradley *per* PDMC

1163 *Zeiraphera ratzeburgiana* (Ratz.) — Hutton Conyers (**65**) 1.viii.2001, det. HEB — CHF

1168 *Gypsonoma sociana* (Haw.) — Stony Stratford (**24**) 21.vi.2001, det. DVM — M. Killeby *per* DVM

1169 *G. dealbana* (Fröl.) — Hutton Conyers (**65**) 24.vii.2001, det. HEB — CHF

1181 *Epiblema grandaevana* (L. & Z.) — Seaton Meadows (**55**) 22.vii.2001, det. K.R. Tuck — J. Harvey & R. Follows *per* APR

1192 *Eucosma conterminana* (Guen.) — Tickencote (**55**) 13.viii.2001 — APR; Idle Stop (**56**) 25.viii.2001 — HEB

1207 *Clavigesta purdeyi* (Durr.) — Hutton Conyers (**65**) 1.viii.2001, det. HEB — CHF

1232 *Pammene populana* (Fabr.) — Llanarthne (**44**) 27.vii.2001 — DJS

1233 *P. aurita* Razowski — Ketton (**55**) 1.viii.2001 — R. Follows & APR

1236 *P. fasciana* (Linn.) — Hutton Conyers (**65**) 26.vii.2001, det. HEB — CHF

1236a *P. herrichiana* (Hein.) — Staplegrove (**5**) 24.v.2001, det. JRL — JAMcG

1271 *P. gallicana* (Guen.) — Bath (**6**) 14.viii.2001 — DJG

1241 *Grapholita compositella* (Fabr.) — Wingate Quarry NR (**66**) 15.vii.2001 — A&JC

1242 *G. internana* (Guen.) — Cynwyl Elfed (**44**) 22.v.2001 — M. Townsend & JB

1245 *G. janthinana* (Dup.) — Hutton Conyers (**65**) 27.vii.2001, det. HEB — CHF

1246 *G. tenebrosana* (Dup.) — Swansea (**41**) larvae in fruits of *Rosa* 15.ix.2001 — M.J. White, *Ent. Rec.* **114**: 161-162

1259 *Cydia fagiglandana* (Zell.) — Hutton Conyers (**65**) 16.vii.2001, det. HEB — CHF

1261 *C. pomonella* (Linn.) — Hutton Conyers (**65**) 2.vii.2001, det. HEB — CHF

1281 *Dichrorampha simpliciana* (Haw.) — Hutton Conyers (**65**) 21.vii.2001, det. HEB — CHF

EPERMENIIDAE

483 *Epermenia chaerophyllella* (Goeze) — Hutton Conyers (**65**) 16.vii.2001, det. HEB — CHF

PYRALIDAE

1292 *Calamotropha paludella* (Hübn.) — Gloucester (**33**) 2.vii.2001 — G. Avery *per* RGG; Rossington (**63**) 24.viii.2001 — RIH

1307 *Agriphila latistria* (Haw.) — Hutton Conyers (**65**) 22.viii.2001, det. HEB — CHF

1313 *Catoptria pinella* (Linn.) — Nosterfield NR (**65**) 28.vii.2001, det. HEB — CHF; Oldmeldrum (**93**) 13.viii.2001 — MRY

1316 *C. falsella* ([D. & S.]) — Duncanstone (**93**) viii. 2001 — A. Ewing *per* MRY

1317 *C. verellus* (Zinck.) — Southsea (**11**) 4.vii.2001 — JRL, *Ent. Gaz.* **52**: 226; Lydd (15) 5.vii.2001 — K. Redshaw, *Atropos* **14**: 46-47

1326 *Platytes cerussella* ([D. & S.]) — Yaxley (31) 25.vi.2001, first record since VCH — A. Frost *per* BD

1331 *Acentria ephemerella* ([D. & S.]) — Hutton Conyers (**65**) 17.viii.2000 — CHF

1335 *Scoparia ancipitella* (La Harpe) — Tulloch Moor (**96**) 22.vii.2001 — MRY

1345 *Elophila nymphaeata* (Linn.) — Hutton Conyers (**65**) 28.vi.2001, det. HEB — CHF

1350 *Nymphula stagnata* (Don.) — Hutton Conyers (**65**) 12.viii.2000 — CHF

1354 *Cataclysta lemnata* (Linn.) — Sampford Peverell (**4**) 2.vi.2001 — MRY

1360 *Hellula undalis* (Fabr.) — Hurn (**11**) 16.x.2001 — M. Jeffes *per* PHS

1361 *Pyrausta aurata* (Scop.) — Sampford Peverell (**4**) 27.vii.2001 — MRY

1368 *Loxostege sticticalis* (Linn.) — Hutton Conyers (**65**) 19.ix.2001, det. HEB — CHF

1370 *Sitochroa palealis* ([D. & S.]) — Tickencote (**55**) 13.viii.2001 — R. Follows, J. Wright, AJM & APR

1374 *Paratalanta hyalinalis* (Hübn.) — Church End (**31**) 9.vii.2001 — JNG-D

1374a *Sclerocona acutellus* (Eversm.) — Milton-on-Stour (**9**) 26.vi.2001 — J. Burge *per* PHS

1397a *Diplopseustis periersalis* (Walker) — Tresco (**1**) 19.x.2001, det. MRH & M. Shaffer — R. Fray & AJM, *Atropos* **16**: 26, **Adventive species new to the British Isles, native to Australia**

1403a *Duponchelia fovealis* Zell. — Burnham-on-Sea (**6**) 27.xii.2001 — B.E. Slade, *Ent. Rec.* **114**: 122; Walberton (**13**) eighteen between 4.viii and 25.x.2001 — JTR; Chichester (13) 22.viii.2001 — SP; Hexton Chalkpit (**20**) 20.x.2001 — CWP, *Ent. Rec.* **113**: 255-256; Kingsthorpe (**32**) 19.x.2001 — P.D. Sharpe *per* DVM

1406a *Herpetogramma licarsisalis* (Walk.) — Tresco (**1**) 12.x.2001 — AJM & MS, *Atropos* **16**: 27

1408 *Palpita vitrealis* (Rossi) — Wellingborough (**32**) 22.x.2001 — D. Larkin *per* DVM; Flixton (**59**) 16.x.2001 — KM

1415 *Orthopygia glaucinalis* (Linn.) — Hutton Conyers (**65**) 12.viii.2000 — CHF

1417 *Pyralis farinalis* (Linn.) — Hutton Conyers (**65**) 10.vii.2001, det. HEB — CHF

1426 *Achroia grisella* (Fabr.) — Hutton Conyers (**65**) 23.viii.2001, det. HEB — CHF

1433 *Cryptoblabes bistriga* (Haw.) — Hutton Conyers (**65**) 7.vii.2001, det. Heb — CHF

1434 *C. gnidiella* (Mill.) — Bridport (**9**) larva in Spanish pomegranate 29.ix.2001, moth bred — MSP

1439 *Trachycera advenella* (Zinck.) — Banchory (**91**) 18.viii.2001 — RMP; Oldmeldrum (**93**) 15.viii.2001 — MRY

1447a *Sciota adelphella* (F. v. R.) — Portsmouth (**11**) 28.vi.2001 — IRT, *Ent. Gaz.* **52**: 226; Hemingford Grey (**31**) 5.vii.2001 — JNG-D

1454 *Dioryctria abietella* ([D. & S.]) — Hutton Conyers (**65**) 7.vii.2001, det. HEB — CHF

1454b *D. sylvestrella* (Ratz.) — Shaggs (**9**) 1.viii.2001 — MSP & D.G. Green; Walberton (**13**) four, 11-30.viii.2001 — JTR; Hawkinge (**15**) 17.viii.1995 — T. Rouse; Dover (15) 3.viii.1997 — T. Rouse; Longrope Wood (15) 29.vi.1999 — J.H. Clarke; Greatstone (15) 30.vii.1999 — B. Banson & S.P. Clancy; Dymchurch (15) 30.vii.1999 — J. Owen; Tunstall Forest (**25**) two 18.viii.2001 — A. Butcher; Fulbourn (**29**) 9.viii.1997 — J. Dawson; St Catherine, Jersey (**113**) 31.vii.1999 — R. Long, *Atropos* **15**: 16-19; **16**: 78, **New to the British Isles**

1486 *Apomyelois bistriatella* (Hulst) — Flixton (**59**) 28.vii.2001 genitalia det. SMP — KM

1462 *Pempeliella dilutella* ([D. & S.]) — Wharley Point (**44**) larvae 24.v.2001 — S. Bosanquet *per* JB

1464 *Gymnancyla canella* ([D. & S.]) — Dawlish Warren (**3**) 4.viii.2001 — R.F. McCormick, S. Mitchell & BPH, *Ent. Rec.* **114**: 40

1465 *Nephopterix angustella* (Hübn.) — Hemingford Grey (**31**) 21.viii.2001 — JNG-D

1470 *Euzophera pinguis* (Haw.) — Great Torrington (**4**) 21.vii.2001 — R.F. McCormick & BPH

1472 *E. bigella* (Zell.) — Newton Abbot (**3**) larvae in pomegranate 1.iv.2001, moth bred — BPH; Bridport (**9**) larva in Spanish pomegranate 29.ix.2001, moth bred — MSP

1476 *Ephestia cautella* (Walk.) — Fulham (**21**) 17.x.2001 — MRH

1477 *E. figulilella* (Gregs.) — Plymouth (**3**) larva on pomegranate, origin Iran, 5.i.2001, moth bred — RJH, *Ent. Gaz.* **53**: 130

1480 *Homoeosoma nebulella* ([D. & S.]) — Ampthill Park (**30**) 21.ix.2001 — DVM

1481 *H. sinuella* (Fabr.) — Foulney Island (**69**) 18.vi.2000 — O. Breffit & NAL

1484 *Phycitodes saxicola* (Vaughan) — Loch Fleet (**107**) larvae on *Tripleurospermum maritima*, em. vi.2001 genitalia det. MRY— P. Entwistle *per* MRY

1485 *P. maritima* (Tengst.) — Datchworth (**20**) 19.viii.2001, genitalia det. — SMP, *Ent. Rec.* **113**: 255-256

PTEROPHORIDAE

1496 *Cnaemidophorus rhododactyla* ([D. & S.]) — Trigon (**9**) 4.vii.2001 — C. Manley *per* PHS

1498 *Amblyptilia punctidactyla* (Haw.) — Bispham (**60**) 2.iv.2001 det. SMP — B. Brigden *per* SMP

1502 *Platyptilia isodactylus* (Zell.) — Pembrey Burrows (**44**) 24.v.2001 — S. Bosanquet & JB

1512 *Merrifieldia baliodactylus* (Zell.) — Swaffham (**28**) 20.vii.2001, det. C. Hart — AM

1513 *Pterophorus pentadactyla* (Linn.) — Hutton Conyers (**65**) 18.vii.2000 — CHF

1518 *Ovendenia lienigianus* (Zell.) — Flixton (**59**) 23.vii.2001 genitalia det. SMP — KM

CORRIGENDA

The following corrections to items in the current volume have been notified to the Editor.

Page183: In the review of the book *Die Schmetterlinge Baden-Wurtembergs*, the word "Ilmer" on line 3 should read "Ulmer".

Page188: The author of the note on *Polygonia egea* (Cramer), has asked me to point out that the photograph used to illustrate the text was not the Corsican individual discussed in his note. It was, in fact, a library picture of this species, selected by the Editor to fill a gap.

SOCIETAS EUROPAEA LEPIDOPTEROLOGICA (SEL)

Readers will note that in the past two issues we have carried an advertisement for SEL. We commend this organisation to our readers and suggest that membership is a must for all serious lepidopterists. I have been asked me to point out that UK entomologists interested in joining do not need to find ways of sending money abroad and do not, therefore, need to pay the 5% handling charge. Instead, they should contact the Hon. Treasurer, Barry Goater, at 27 Hiltingbury Road, The Ridge, Chandlers Ford, Hampshire SO53 5SR or via e-mail at barry@goaterb.freeserve.co.uk. Mr Goater will be pleased to deal with all SEL related queries from UK residents, including new subscriptions and renewals. The UK subscription remains unaltered at £23.50 for Ordinary Members and £27.00 for Corporate Members; cheques should be made payable to SEL (or to Societas Europaea Lepidopterologica) and NOT to B. Goater.

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